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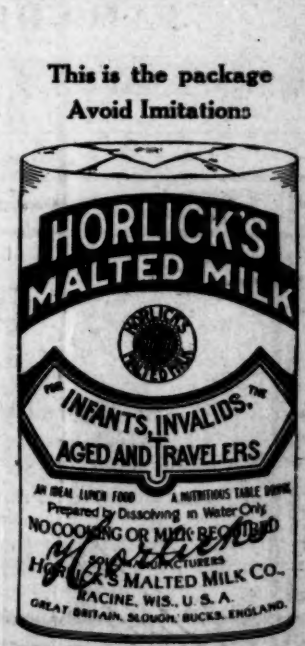

Medical Times

A Monthly Journal of Medicine, Surgery, and the Collateral Sciences

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General Scientific

SOME ASPECTS OF SYPHILIS.

By MORRIS H. FRANTZ, M. D.

ASSISTANT IN NEUROPATHOLOGY, NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; ASSISTANT IN NEUROLOGY, NEUROLOGICAL INSTITUTE.

New York.

Syphilis as a disease has always been interesting. It has been extant from time immemorial and it appears that as the race passed through the various stages of civilization the disease became more prevalent, justifying fully the axiom of Fournier, that "Civilization means syphilization." The disease has so many variegated forms, and presents so many different phenomena, that Osler's saying, "Know syphilis and you will know medicine," is a good adage. And this being the case, any suggestions as to its diagnosis and treatment always merit attention.

Nothing new is offered in this paper, but an attempt is made to bring out certain points which have proved of interest and value to the writer. For more than a decade the Wasserman test has been the chief diagnostic measure to determine the presence of syphilis, but of late its merits have been disputed and such men as Symmers[1] and his co-workers have attempted to detract from its value, claiming that they found "that the Wassermann reaction gives a negative result in from 31 to 56 per cent. of cases in which the characteristic anatomic signs of syphilis are demonstrable at necropsy, and that the Wassermann reaction in the living patient is positive in at least 30 per cent. of cases in which it is not possible to demonstrate any of the anatomic lesions of syphilis at necropsy." Larkin[2] and his co-workers have, on the other hand, upheld its efficacy as a diagnostic measure, claiming that "as a means of corroborating syphilitic infection the Wassermann test is at least 90 per cent. dependable, as shown in a series of positive reactions in which 90 per cent. could be accounted for by syphilitic changes in the aorta alone." There has been an erroneous opinion prevalent, and it may be said to be still prevalent, that a negative Wassermann excludes the possibility of syphilis. The writer will not attempt to discuss further the various phases of this academic subject, this having been so ably done by the skilled serologists and pathologists above mentioned, but he will lay down some maxims that have been followed by him with fairly good results, and they are, that the Wassermann reaction as a test to determine the presence of syphilis is of value when it is positive; that it is not of much value when it is negative except when the spinal fluid is also negative and is obtained, after a course of treatment, several successive times; that the absence of a positive Wassermann does not exclude the presence of syphilis; that if the spinal fluid is positive the negative blood Wassermann be ignored; and that if both blood and spinal fluid are negative, yet the clinical diagnosis be that of syphilis, especially where exposure to the disease has occurred, specific treatment should be given.

In passing it may be interjected that specific treatment as practiced by the writer consists of starting the patient on mercuric chlorid gr. 1/60 and potassium iodide (saturated solution) m. x., by mouth, increasing the dose weekly till gr. 1/25 and m. xxx are reached, this continuing throughout the course of treatment, as well as bi-weekly intramuscular injections of mercury salicylate (gr. ii). Two weeks later patient is given 4 gm. arsphenamin (arsenobenzol brand), repeated at weekly intervals for four weeks. Then patient is given 6 gm. at 10-day intervals three times. Then another Wassermann test of blood and fluid is made. The frequency of administration of arsphenamin is now gauged by the serological findings. A negative blood Wassermann does not halt the treatment. It should be mentioned that before starting treatment a urinalysis is made, and if any contra-indication exists the inunction method is employed, the official calomel ointment being used, the skin being a safe and efficient route as shown by Schamberg.[3] To ward off any ptyalism a potassium chlorate mouth wash is prescribed and the gums painted bi-weekly with tincture of iodine.

It is the desire of the writer to bring to the attention of the readers the fact that many cases of syphilis present themselves with symptoms which do not suggest the presence of syphilis, and such cases are usually treated symptomatically, the Wassermann test not even being made. Syphilis of the nervous system, particularly, produces such indistinct symptoms that quite often such cases are perhaps not thought of as being syphilitic in origin but are treated as the symptoms arise. A few cases in point may make this more clear.

Case 1.—A. F., Italian, 30 years of age, male, consulted me at the Neurological Institute, on account of severe headaches and insomnia. The physical examination showed a slight irregularity of the pupils and the reflexes not disturbed. The history was gone into carefully and the patient remembered that he had had some lesion on his penis 10 years ago. The patient was admitted to the hospital and blood Wassermann and spinal fluid tests were made. The report was "blood positive and fluid negative." The interesting phase in this case is that the patient has been treated with all sorts of hypnotics, meanwhile getting progressively worse, being extremely irritable and fidgety in spite of the hypnotic action of the drugs. Here we see a Wassermann test was not even made by his physician. The patient was put on specific treatment and improved.

Case 2.—A. D., female, aged 30, consulted me at my office; complained of "extreme nervousness and dizzy spells," and that she was not able to walk without "falling over." The examination showed irregular pupils, increased knee jerks, and indication of a Babinski on the right. The patient was very talkative and appeared to be unstable. She claimed to have lived a virtuous life and no amount of interrogation or persuasion could induce her to admit that she had been exposed. She was admitted to the Post-Graduate Hospital, where a blood Wassermann was made, together with an examination of the spinal fluid. The report showed a positive Wassermann of blood and spinal fluid and typical luetic curve. Unfortunately this case could not be followed up because the patient on learning her true condition disappeared. Here we note that the patient had been treated for vertigo in various manners but no Wassermann done of the blood or spinal fluid.

Case 3.—G. L., female, 10 months old, was brought to me at the Post-Graduate Hospital, suffering from a left hemiplegia. The possibility of syphilis was thought of immediately and the family history was gone into thoroughly. The mother had had ten miscarriages and one other living child besides the patient. Patient suffered convulsions from the age of 7 months, having three in all, the last one being followed by hemiplegia. A blood Wassermann was taken of the father and showed a 3 plus. The father then admitted that he had had some infection 25 years ago and had been treated at the University of Palermo, Italy. Here the old adage "The sins of the parents shall be visited on their children" is forcibly brought out. The father was treated for a very short time after the exposure and so the disease remained with him. The child was incessantly treated for its hemiplegia by massage and electricity, but apparently no effort was made to ascertain the etiological factor. Here again no attempt had been made to do a Wassermann test.

Case 4.—C. S., female, 33 years old, was seen by me at the Neurological Institute. She complained of various pains in the back and leg, and especially in the nape of the neck. She had been married 7 months and as yet had not conceived. Physical examination showed no abnormal condition present. The advisability of taking a Wassermann was thought of but as the woman was quite averse to having this done, faradism was prescribed, chiefly on account of its psychic effect. After two weeks' treatment the patient was naturally not relieved and returned with a fine rash, and then the possibility of syphilis became a probability. Then it was enjoined upon her that she submit to a Wassermann test. The blood Wassermann was 4 plus. Here we observe that the symptoms were absolutely vague, the examination disclosing nothing. Had a Wassermann not been taken the patient would have gone on indefinitely without the necessary treatment. Under specific treatment she showed improvement. Here the therapeutic test corroborated the laboratory findings.

Case 6.—C. G., a male, 26 years old, consulted me privately because he was extremely irritable, was always biting his finger nails and could not sleep well. The examination disclosed only exaggerated knee jerks with the possibility of a Babinski on the left. The patient's blood was examined and a negative Wassermann was obtained. However, the spinal fluid showed a positive reaction with a typical luetic curve. The patient was placed upon specific treatment. He is improving remarkably well. Here again we note that the symptoms were not entirely clear, the examination not disclosing anything of importance except a possible indication of a Babinski, and here, too, the blood Wassermann test was negative.

Case 7.—A. G., female, 23 years old, is the wife of C. G. (Case 6). Physical examination in this case revealed a rash over the ankles, anterior surface of the legs, chest and genitalia. The blood Wassermann here was positive. Patient was put under specific treatment with calomel ointment as a local application for the skin and she is improving, the rash having disappeared in a few days. Here it may be of interest to note that this is a case of conjugal syphilis.

Case 8.—R. S., age 56 years, was seen at the Neurological Institute; complained of severe pain in the right side of the face, particularly along the margin of the jaw. He has had this pain now for a number of years, the only relief that he has had having been obtained through the use of acetanilid and phenacetin. The pain at one time was so severe that the patient bravely submitted to a resection of the mental branch of the inferior dental nerve. Unfortunately this brought no relief. The examination showed slight sluggishness of the pupils; otherwise negative. Blood Wassermann was made and result was positive. Patient under specific treatment shows quite some improvement, which as yet is not permanent. In this case we find that an operative measure, such as resection of a nerve, was resorted to, and such a simple procedure as taking blood for a Wassermann was not. The patient was fed on all sorts of analgesic drugs for a number of years.

Case 9.—A. B., female, married, was seen by me at the Neurological Institute; complained of a "tired feeling" and of being "all in," loss of libids, and various pains along the spine and legs. The examination disclosed unequal pupils which did not react to light and active knee jerks, but no abnormal reflexes. However, the epitrochlear gland was palpable. No amount of questioning could elicit from the patient any facts which would point to a specific disease. According to her story she was absolutely innocent. Wassermann blood test was made and the report was positive. The patient insisted that this could not be so, therefore another Wassermann test was made at the Department of Health laboratory which corroborated the first findings. The patient then reluctantly confessed that while her husband was on the road she had had illicit relations with a male friend of the family. Here the symptoms pointed toward a specific disease while the history was entirely misleading.

Case 10.—J. M,. male, 36 years old, was sent to me by a physician with the following statement: "This is a very interesting case and the Wassermann was found to be negative on two occasions." Patient complained of a "stiffness in his legs, that he could not walk steadily, and of rectal and vesical incontinence, the latter being so bad that he has had to carry a urinal with him. The physical examination showed a man in a very impoverished condition, standing with difficulty, walk spastic, pupils reacting, but rather sluggishly, the cremasteric reflexes present, knee jerks very active, and slight indication of Babinski on both sides. The clinical diagnosis of cerebro-spinal syphilis was made in spite of the negative blood Wassermann. Patient was advised to have a lumbar puncture done but this he refused, saying he already had had one performed in a hospital at San Francisco. When further questioned he stated that he had already received intravenous injections of "606". The patient was put on specific treatment. Tincture of belladonna and hyoscine, together with sodium bromide, were given to check somewhat the incontinence until the specific medication would have time to act. After the patient was treated for one week he experienced less incontinence, felt more steady in his legs and succeeded in going back to work for one day. Three weeks after treatment was started patient had neither rectal nor vesical incontinence, felt more steady and was able during that period to work three or four times. It should be said that he developed a severe ptyalism, which necessitated the cessation of the treatment for one week, and in addition he suffered some discomfort after the intramuscular injections of mercury salicyate, which prevented him being given more than four injections.

The point of interest is that the patient's condition was diagnosed as syphilis at the hospital where he was treated and proper treatment was instituted, that is, salvarsan was given (.4 gm. bi-weekly for two weeks). This was about eight months prior to our examination. The patient at that time was not properly advised as to his condition and so soon as he gained some strength he again resumed his debauches, resuming his illicit relations with the person who transmitted the disease to him. The advisability of fully informing the patent as to the true nature of his condtion is quite clear. Here again we see the fallacy of relying upon the negative Wassermann as a criterion for the absence of the disease.

Summary: Recapitulating, we would mention, as the salient points in this brief paper, that only too often the physician interprets the negative Wassermann test to mean that the patient is free from syphilis; that syphilis masks itself in various forms, unfortunately time and again presenting certain symp-

toms which throw the physician off his guard; therefore the proper procedure, and one which has proved satisfactory to the writer, is to take a detailed history in each case, and no matter whether the patient shows clinical signs of syphilis or not to make a Wassermann test, for if, according to Symmers, the Wassermann test is useful in 63 per cent. of cases, and according to Larkin it is diagnostic in 90 per cent. of cases, a *mean* average of over 76 per cent. is attained. Now, if the test is diagnostic in over 76 per cent., it surely is worthy to be employed as a laboratory aid; if it be positive the patient should be put on specific treatment; if it is negative and the clinical diagnosis is that of syphilis, the spinal fluid should be examined, but if it is negative the patient should be put on anti-luetic treatment anyhow; mixed treatment should precede and follow arsphenamine.

Thanks are due to Professors Hammond and Schlapp of the Post-Graduate Hospital and to Dr. Timme of the Neurological Institute for permission to report these cases from their respective services.

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[1] Symmers, Darlington & Bittman, *J. A. M. A.*, February 2, 1918.
[2] Larkin, Levy & Fordyce, *J. A. M. A.*, June 1, 1918.
[3] Schamberg, Kolmer, Raeziss & Guonen, *J. A. M. A.*, Jan. 19, 1918.

616 Madison Avenue.

THE AGED AND THE WAR.

By I. L. NASCHER, M. D.
New York City.

In a home which I recently visited I found a group of men, the youngest well past sixty, the oldest a score or more of years older, discussing the war. They had before them maps cut from the newspapers and pins with variously colored heads stuck in the maps to indicate the positions of the forces mentioned in the news columns. So intent were they in their discussion that they did not pay attention to me, and so alert that until my mind was concentrated upon it I was unable to follow them in their arguments. Three of this group had retired from business and spent most of their time in a park, engaged in reminiscences. Another was in business with his sons, but he spent more time in the park than in his business. The fifth was a messenger who did chores for a large society, and the sixth, a butcher, attended to his business in the morning and joined the group of old men in the park in the afternoon.

These men, some of whom I had known for years, were fairly typical, mentally and physically, of men of their age and in their station of life. The oldest of the group was 84 years old, a Civil War veteran, for many years a public official, but for the past ten years decrepit in body and lately giving evidences of senile dementia. The youngest, the butcher, was physically active and strong and mentally bright, though in recent years he had taken little interest in anything beyond his butcher shop, himself and family and some pet hobbies. The messenger took little interest in anything except the petty personal affairs of the members of his society. Another of the group, a retired merchant, was born in Germany and had served in the German army in the Franco-Prussian war. For several years before the present war began he had shown signs of mental deterioration, had lost interest in the affairs of the day, and in his conversation confined himself almost exclusively to reminiscences. He lived in the world of yesterday, wore an old frock coat and sometimes an old high hat, and decried modern innovations. Another of these old men, whom I had met a few times, was concerned only in himself. He was a hypochondriac, always looking for signs of disease, the slightest scratch, pimple, ache or other symptom causing him to run to or send for the physician. This man suffered also from oikiomania, the constant fear that his family were trying to get rid of him. His conversation always turned upon himself and his supposed ailments, his dread of death and his fear of his family. I did not know the sixth man and learned later that his sons sent him to the park daily as he had become absent-minded and irritable and unreasonable in his business affairs.

Here were six old men having diverse interests in life, five of whom presented the signs of senile mental impairment, yet all mentally aroused, their minds engrossed with one subject, foreign to most of them before the war. In their discussions they rarely referred to themselves, but the Civil War veteran and the German did bring in the tactics and strategy that were employed in the wars in which they took part and they tried to apply them to the present war.

From the medical standpoint the remarkable feature of their discussion was the reasoning power of the two men who had shown decided senile mental deterioration, especially the Civil War veteran. Before the war this man was the listener of the group. He seldom spoke of himself, and when he did speak he began rationally but his conversation soon became rambling and he sometimes continued to talk after his audience left him. Sometimes he fell asleep while speaking and he frequently fell asleep while apparently an interested listener. During this war discussion he spoke rationally and emphatically, presented plausible arguments to sustain his points and remained awake and alert when others were speaking.

The change in the mental attitude of the German was no less remarkable. He had taken an interest in the war from the very beginning, following the movements of the armies on the maps in the newspapers and making notes of the activities of the two sides. At the discussion he was the most forceful and logical in his arguments, instantly recognized flaws in the arguments of the others, and at the close of the discussion the others were obliged to agree with him. After the discussion, which lasted about an hour, several of the group were in a state of mental collapse. The Civil War veteran fell asleep while I was talking to him and the German kept on talking about the war but could give me no rational reply to questions on other matters and had forgotten where he lived, forgotten even the name of the President. The messenger frankly acknowledged that his mind was muddled. He recovered himself in a few minutes and could speak rationally upon the subjects that usually interested him, such as the family affairs of the members of his society, but he could not concentrate his attention upon the war. His mental confusion was limited to war topics and this persisted for several days. The hypochondriac took little part in the discussion and immediately after it was over he spoke of his ailments. When I asked him something about the war he said the war did not interest him; he was interested only in himself. The butcher was not affected by the discussion, as he discussed the war daily with customers. I had no opportunity to speak to the sixth man, as he went home immediately after the close of the discussion. During the discussion he was mentally alert but more interested in the financial side and the commercial future of the belligerents. Just before he left he said he had had enough war talk to last him for the

rest of his life, and I assume from this that the discussion had imposed an unaccustomed mental strain and caused brain fag.

I have given perhaps more space to the description of these men, engaged in what is now a commonplace discussion, than the subject deserves. But these six men are fairly representative of the great mass of men between 60 and 85 years of age, and their mental attitude, so different from the general mental attitude of the aged before the war, is typical of the altered mentality of the aged at present.

The war has produced universally an abnormal mental attitude or state of mind. Emotions have been exaggerated, often stirred so profoundly that reason, judgment and common sense have been held in abeyance. The young are more easily impressed by emotional appeals, while older persons are more apt to listen to reason. In old age the mental activities become dulled, memory, judgment and reason become impaired and the emotions, although easily aroused, are neither deep nor prolonged. They will weep readily, though there be little cause for grief, and a few minutes later they may laugh at a triviality. The war, which has produced an abnormal frame of mind generally, has also affected the mentality of the aged. It has stimulated the mental faculties without, however, improving the condition of the brain. We find, therefore, a decided improvement in the reasoning power, but after a short period of activity brain fag and mental confusion set in as reactions. This happened at the war discussion I have described. Old women are similarly affected, although they are more readily impressed through their emotions than through their reason. The reaction to intense emotions is brain fag, generally followed by sleep.

The following incident bears out this point. During the last Liberty Loan drive pathetic appeals were made for one week in a vaudeville theatre in this city during intermission. The first act after intermission, one of the most popular acts on the vaudeville stage, was received with but little applause. Yet the same act had always been generously applauded before the appeals were made and was well received the following week when put on again. I have been told that the same thing happened in other theatres, the first act after the appeals being received coldly, the audience not recovering its mental poise until some time after the appeals were made. This was especially notceable at the matinées, these being patronized mainly by women.

The war has also affected the aged in their physical activities. With the withdrawal of the millions of young men from their accustomed vocations and the establishment of war industries requiring hundreds of thousands of employees, opportunities were given to the aged to take up physical employment. Old men became messengers, farm hands ammunition workers, etc., while old women took up knitting and other work usually done by younger women. These tasks also stimulated mental activity, forced attention to their work and away from themselves, their petty ailments and worries and anticipated death. They now take an interest in the affairs of the day, read the papers and instead of speaking ergretfully of their past and fearfully of their future, they take a wider outlook upon life. They take an interest in each other as well as in themselves. Never before have we seen so many old couples and old men with younger women on the streets, in the theatres and at other places of amusement. It is not only a relative but also an absolute increase in numbers. At one of the largest dancing schools in the country I was told that the number of elderly and aged pupils of both sexes has greatly increased during the past year. To this extent the war has had a beneficial effect upon the aged. It has drawn them out of their lethargy, roused them mentally and physically, put new life, spirit and hope into them and made them feel rejuvenated.

103 West 88th Street.

THE JURY SYSTEM.*

HON. ROBERT H. ROY,
JUDGE OF THE COUNTY COURT, COUNTY OF KINGS.
Brooklyn, N. Y.

Trial by jury is one of our oldest civil institutions. It has also in the main been one of the most revered. Whence it sprang, that is, the time and place of its origin, are questions about which much has been written and diverse views have been expressed. "Many writers of authority," says Canon Stubbs, an old English writer, "have maintained that the entire jury system is indigenous in England, some deriving it from Celtic tradition based on the principles of the Roman Law, and adopted by the Anglo-Saxons and Normans from the people they had conquered; others have regarded it as a product of that legal genius of the Anglo-Saxons of which Alfred is the mythic impersonation, or as derived by that nation from the customs of primitive Germany or from their intercourse with the Danes. * * * One scholar maintains that it was brought by the Norsemen from Scandinavia; another that it was derived from the processes of the Canon Law; another that it was developed on Gallic soil from Roman principles; another that it came from Asia through the crusades." (*Const. Hist of Eng.*, Vol. I., pp. 655-6.)

Judge Cooley asserts (*Am. Ency., IX., Art. Jury*): "With much variety of form, modes of trial essentially similar to that by jury prevailed among both the Teutonic and the Scandinavian nations from a very remote antiquity."

On the other hand, Pomeroy (*Johnson's Cycl.*, Vol. II., Art. Jury) insists that, "Jury trial in its modern form is certainly a product of English social and political forces."

Forsyth (*Trial by Jury*, Ch. 4, Sec. 1) declares: "It may be confidently asserted that trial by jury was unknown to our Anglo-Saxon ancestors; and the idea of its existence in their legal system has arisen from a want of attention to the radical distinction between the members or judges composing a court, and a body of men set apart from that court but summoned to attend in order to determine conclusively the facts of the case in dispute. This is the principle on which is founded the intervention of a jury, and no trace whatever can be found of such an institution in Anglo-Saxon times."

The modern and generally accepted view is that expressed by Pollock and Maitland in their excellent "History of the English Law."

"The English jury has been so highly prized by Englishmen, so often copied by foreigners, that the origin has been sought in many different directions. At the present day, however, there can be little doubt as to the quarter to which we ought to look. We must look to the Frankish *inquisitio*, the prerogative right of the Frankish Kings."

* Read before the Society of Medical Jurisprudence, New York.

When the Frankish Empire broke up, the Norman Dukes retained the *inquisitio* in the conduct of their separate domains. A period followed concerning which we know little of the jury. Referring to that time Pollock and Maitland say: "Then deep darkness settles down. When it lifts we see in the new states that have formed themselves no central power capable of wielding the old prerogative for a long time to come; the sworn inquest of neighbors will not be an entirely unknown thing in France; it will only be finally overwhelmed by the reception of the Roman Canonical procedure. Even in Germany it will appear from time to time; yet on the whole we may say that but for the conquest of England it would have perished and long ago have become a matter for the antiquary. Such is now the prevailing opinion and it has triumphed in this country over the natural disinclination of Englishmen to admit that this palladium of our liberties is in its origin not English but Frankish, not popular but royal."

According to Coudert (*Certainty and Justice,* p. 64): "The Petit jury, in something like its present form, as well as the accusing, or grand jury, became part of the ordinary mechanism of justice apparently about the reign of Henry II. (1154-1189), and they both appear in something like their final form about the middle of the 12th century."

It is true that Athens during the Pereclean age (450 B. C.) had a system of administering law through a popular tribunal, but there is not the slightest relationship between it and the Frankish *inquisitio* which we know was the germ from which our modern jury grew. We can hardly agree with Grote when he avers, "All the encomiums which it is customary to pronounce upon jury trials will be found predicable of the Athenian dykasteries in a still greater degree; all the reproaches which can be addressed on good ground to the dykasteries will apply to modern juries also, though in a less degree."

It is interesting to note in passing that the jury system was employed first in civil trials and was afterwards adapted to the trial of criminal cases. Moreover, it is "clear beyond dispute that the jury anciently consisted of persons who were witnesses to the facts, or at least in some measure personally cognizant of them; and who consequently in their verdict gave not (as now) the conclusion of their judgment upon facts proved before them in the cause, but their testimony as to the facts which they had antecedently known." (*Stephens Pleading,* 5th Ed., 145). The verdict was a formal consensus of what they personally knew concerning the controversy.

Thus we find that since its introduction the nature of the jury has completely changed, for whilst it was originally chosen from those familiar with the parties or cognizant of the facts, a corresponding amount of care is now taken to exclude all who are not absolutely ignorant of the matter involved, or who do not come to the trial with their minds free from convincing impressions in regard to the subject of controversy which is to be determined by their verdict.

A severe critic of the jury system (*Wilcox on Frailties of the Jury*) remarks: "The judge has been selected for his learning, the jury for their lack of it. He passes on all questions of law, applies the knowledge that he has, and seeks for more. The jury pass on questions as to the facts, but cannot use the knowledge they possess. Had it been known that they had such knowledge they had not been chosen. The nearer their minds approach a blank on questions they must try, the better they are qualified. Thus knowledge qualifies the judge and ignorance the jury." A statement that has the merit of being clever, but is without better excuse.

Interesting as it may be to trace the origin and history of jury trials, we are, after all, more concerned with the question whether that mode of trial meets the test of present needs. An institution may be well fitted to the requirements of one age and be inadequate to meet the demands of another. On the other hand, there are certain principles which permeate our civilization, and that are essential to our civil and social ideals, which find expression through forms and customs whose elimination might seriously affect the principle itself. Is trial by jury merely a method of procedure which has no vital relationship to our political life, or does it embody a principle which will be endangered if the jury is abolished? Has it ceased to be efficient and useful? Does it promote or hinder justice? Are its defects and deficiencies inherent or incidental? Can they be removed only by the abolition of the system itself? Have we discovered a better method of determining disputed facts, which will secure a larger measure of exact justice in dealing with crime or private litigation? Are the frailties of the jury more numerous or more dangerous than the frailties of judges?

What is the verdict of history? Seemingly a disagreement. Those who favor jury trials, however, seem to far outnumber those who oppose. The judgment of lawyers of large experience, and especially of those who have observed from the bench the workings of this method of trial, are entitled to much weight and consideration. Likewise the views of historians, though perhaps not so weighty, are of great value. Their opinions have been molded to some extent by a notion that trial by jury was one of the rights secured by *Magna Charta.* This idea, which persisted through several centuries, has probably influenced many people to regard the jury with greater veneration, because they believed it was wrested from King John by the barons of England. Of course, that notion has been upset by later investigations. *Magna Charta* did not give us trial by jury. (McKechnie *Magna Carta,* pp. 158-163.) But when De Lolme declares that jury trial is "the noblest invention for the support of justice ever produced," and Hume that it is "an institution admirable in itself and the best calculated for the preservation of liberty and the administration of justice that ever was devised by the wit of man," and Sedgwick, an American, that it is "the most cherished institution of the greatest exemplar of free and intelligent government that the world has ever seen," and our Court of Appeals approves the pronouncement that "it is the fundamental guaranty of the rights and liberties of the people," we may well pause and ask ourselves whether in forming any judgment in opposition to the system we may not have been too much swayed by occasional unsuccessful efforts to persuade a jury to our way of thinking—or talking.

The late Joseph H. Choate, who probably tried as many, if not more, cases before a jury than any other advocate in this country, in a carefully prepared paper read before the American Bar Association, made this statement: "I do not appeal to mere sentiment or prejudice in defense of this, which I believe to be the best method yet devised for the determination of disputed questions of fact in the administration of jus-

tice * * * It is for the integrity, efficiency and utility of trial by jury in civil causes that I am chiefly concerned, and would most earnestly plead today with my professional brethren, who are naturally responsible for pubic sentiment on such a subject. For I cherish, as the result of a life's work nearing its end, that the old-fashioned trial by a jury of twelve honest and intelligent citizens remains today, all suggested innovations and amendments to the contrary, the best and safest practical method for the determination of facts as the basis of judgment of courts, and that all attempts to tinker or tamper with it should be discouraged as disastrous to the public welfare." Judge Miller of the United States Supreme Court in a paper written for the *American Law Review,* reported in the 21st volume of that publication, at page 859, makes these instructive observations: "I must confess that my practice in the courts before I came on the bench had left upon my mind the impression that as regard contests in the courts in civil suits, the jury system was one of doubtful utility. * * * An experience of twenty-five years on the bench, and an observation during that time of cases which come from all the courts of the United States to the Supreme Court for review, as well as of cases tried before me at *nisi prius,* have satisfied me that when the principles above stated are faithfully applied by the court in a jury trial, and the jury is a fair one, as a method of ascertaining the truth in regard to disputed questions of fact, a jury is in the main as valuable as an equal number of judges would be, or any less number. And I must say that in my experience in the conference room of the Supreme Court of the United States, which consists of nine judges, I have been surprised to find how readily those judges come to an agreement upon questions of law, and how often they disagree in regard to questions of fact which apparently are as clear as the law." Washburn (*Study and Practice of the Law*) says: "The people have no safeguard or protection on which they can so confidently rely for life or property as upon an enlightened and independent judiciary. * * * But when men talk gravely of substituting the learning and experience of the court for the good sense, practical experience and unbiased instincts of an impartial jury, they do violence to history, and injustice to the cause of personal liberty and right. * * * I have no hesitation in saying that, I had rather trust to the verdict of twelve fair-minded men of average shrewdness and intelligence in a jury-box, than the judgment of any one man trained to the habits of judicial investigation and accustomed to measure his conclusions by the scale and standard of the law. I had rather trust to the honest instincts of a juror, than the learning of a judge. Nor do I believe that * * * there are more instances of mistaken verdicts than of mistaken rulings of law. The most we can expect from either jurors or judge, is an approximation to accuracy in the respective spheres in which they act."

The opposition of those who criticize trial by jury proceeds in general, first, from a distrust of the intelligence of the average citizen, and, second, from a conviction that the training and experience of a judge fit him peculiarly to pass on the credibility of testimony and the questions of fact involved in litigation. To these criticisms the advocates of this mode of trial urge:

First: That the average intelligence of the majority of our citizens is quite equal to the task of dealing with the testimony of average people in the witness chair, and of declaring what facts are established by such testimony.

Second: An incalculable advantage to the community and the State results from preserving that intimate relation between the average citizen and the administration of law and justice which the jury system provides.

Third: There are as many peculiarities of mind and disposition among judges as among laymen; and their decisions of questions of fact would in the main be no nearer truth and justice than the verdict of the jury.

Fourth: That many of the miscarriages of justice which are charged to the jury system are really the fault of the judges and lawyers in the conduct of such cases.

Fifth: Trial by jury will improve when judges and lawyers are united in a desire to vindicate the wisdom of the system, or at least to develop it to its highest point of efficiency.

Incidentally let me suggest that improvement in the system is practicable; abolition of it is exceedingly remote. Our State Constitution, Sec. 2, Art. 1, declares, "The trial by jury in all cases in which it has been heretofore used shall remain inviolate forever." Does any man here entertain the belief that the people will ever consent to any radical change in this provision? It would seem advisable, therefore, to devote our efforts and ingenuity toward the accomplishment of results that are feasible, rather than to exhaust them in the futile attempt to bring about the impracticable.

Speaking before this audience I feel safe from the charge of demagogism when I assert my confidence in the integrity, intelligence and sincerity of the great majority of our people. That there are many who do not possess either the mental or moral capacity to discharge the duties of a juror acceptably is evident to us all. In the sorting out of those called for such service, and in the selection of the twelve who are to act in the particular case, great care should be exercised. Under our statutes altogether too many are exempted from jury service, and the exempted classes include a large number of our citizens who are best qualified to act as jurymen. Many of these provisions of our law should be repealed, and the duty to serve in our courts should be impressed upon our citizens as a patriotic obligation second only in importance to the duty to take up arms in our country's defense when that necessity arises. Why should a professor or teacher in a college or academy, an editor, an editorial writer, an artist or reporter of a daily newspaper or press association, a veterinary surgeon, an undertaker, a person appointed and serving as an election officer, a person who has been honorably discharged from the National Guard after five years' service, or, "a person actually employed in a glass, cotton, linen, woolen or iron manufacturing company by the year, month or season," be exempted from jury duty?

Moreover, a large class of our people are virtually excluded from service because of the financial loss involved. I refer to skilled mechanics. Men employed in offices, as for example, clerks, bookkeepers, and the like, are usually paid their salaries while serving as jurors, and, therefore, are ordinarily willing to serve, whereas mechanics lose their wages during the period of service, and, therefore, are frequently excused. The consequence is we have comparatively few mechanics in the jury-box, and in my judgment

the system is weakened thereby. The man who has the intelligence to be a skilled artisan is well qualified for jury service. Provision should be made to pay these men a sum equal to what they lose, or else their employers should be required to pay them for the days their attendance is required in court. These men may not have a high degree of culture, but they have what is more necessary in the jury-box, a lot of common sense, and a knowledge of average human nature. But there is another reason why that class of our citizens should be welcomed into our courts as jurors. It is my earnest belief that the permanency of our form of government and the establishment and maintenance of a better and more friendly feeling between labor and law, and employer and employee, depend upon having the laboring man feel that he shares the responsibility for the success of popular institutions and for the supremacy of law and order. There is no better way to make him realize that he is an integral part of our government than to place on his conscience the important obligation of assisting our courts to administer justice and to enforce laws designed to right wrongs and protect life and property.

The law has always conferred upon the presiding judge power to correct any manifest impropriety in the verdict by setting it aside. This is undoubtedly a wise provision. Yet it is a power that ought never to be exercised where the only justification for it is that the judge does not happen to agree with the jury's determination of the facts. Whatever may have been the custom of former generations it is not consistent with our notion of jury trials that the judgment of the presiding justice should be substituted for the judgment of the jury, excepting in those exceptional instances where the verdict is contrary to law, contrary to evidence or clearly against the weight of evidence. The tendency with some judges, amounting to a vanity of opinion to nullify the work of the jury by setting aside verdicts, is harmful. Men have said to me that they do not see any reason why they should be called to serve as jurymen and give up their time and thought to the consideration of evidence and the finding of a verdict, when the verdict is likely to be set aside anyway. Many men feel that their service will be rendered nugatory by the judge, who sometimes adds insult to injury by the manner in which he destroys the verdict. Unfortunately, there is some warrant for that opinion. A judge ought to impress upon the jurymen the dignity of their function and the importance of the work they are required to do. He should make them realize fully that they are assisting in the administration of justice, and that jury duty when earnestly and conscientiously performed contributes to the stability of those institutions through which our political ideals are upheld.

But it is argued even if ordinary men are qualified to act as judges of the facts in ordinary cases, there are cases involving issues of such an unusual and complicated nature that men of special training are required to understand the evidence. The law makes provision for just such situations in section 1063 of the Code of Civil Procedure.

"§1063. (Am'd, 1895). *What Courts May Order a Special Jury to Be Struck.* Where it appears to the court, that a fair and impartial trial of an issue of fact, triable by a jury, joined in an action, pending in the supreme court, cannot be had without a struck jury, or that the importance or intricacy of the case requires such a jury, the court must make an order, upon notice, directing a special jury to be struck, for the trial of the issue. The order must specify the term, and it may specify a particular day in the term, when the jurors must attend."

Judges have been loath to allow these special juries and applications under the section are rare. If the law has become virtually a dead letter, it is due to the action of our judges, who may have been misguided by an excessive reverence for the jury system, or by a fear that their action in granting special juries might be construed as an indication that they were losing faith in the people. If the latter, then it would seem to furnish an excellent argument against the contention that judges are more trustworthy as arbiters of facts in litigation.

We cannot get a better system for the trial of criminal cases, and I do not understand that the opponents of trial by jury propose any change in criminal cases. I have had a considerable experience with the trial of cases both civil and criminal. I have heard verdicts of acquittal rendered which in my judgment did not reveal an intelligent and conscientious consideration of the evidence, and some that were arrived at in manifest defiance of the law as charged by the court. Nevertheless, I believe that a jury trial in felony cases is the best method of trial. Whatever its defects may be, its virtues more than offset them. Its value as a protection from anything like official or judicial persecution is too well established and understood for the people ever to be persuaded to consent to its abolition. As long as the people continue to be capable of self-government, they will always reserve to themselves the power to pronounce an accused person guilty or not guilty of a felony. All we can do, and this we ought to do, is to elevate the standard of education among our people, and inculcate the moral ideals of our nation, so that our jurymen will bring to the analysis of the evidence minds that can distinguish right from wrong, and moral convictions that will impel them to desire to have the right prevail.

I recently asked a surrogate of one of our counties, who is distinguished for his ability and impartial judgment, how jury trials were working out in his court. He stated that the method of trying will contests in his court had vindicated the sagacity of those who had proposed them. There are fewer wills contested and the saving of time under the new procedure is most advantageous. Moreover, he has not yet had occasion to set aside any verdict; has been impressed with the painstaking manner in which the jurors did their work, and in not more than "a couple of cases" was the verdict rendered different from what he would have found. In those cases he was convinced that while the verdict did not accurately accord with the intention of the law in giving men the right to make any testamentary disposition of their property they choose to make, nevertheless the verdict revealed a sincere desire to accomplish robust justice and the results of their verdict in those particular cases were more in accord with fair dealing than were the provisions of the will invalidated by their finding.

In the trial of criminal cases I have observed the same good sense shown when jurors render a verdict of acquittal in apparent violation of law and facts. We must uphold law. We lawyers and judges cannot afford to take liberties with it. In the interpretation and application of law judges must be absolutely impartial.

But law is an aid to justice, and situations arise in our courts when the unmistakable demands of justice are incompatable with, and require a suspension of, law. And, if a jury conscientiously considers a verdict of guilty in a given case, however warranted by the law and evidence, would produce results revolting to justice, then, as the sovereign power of the State, it has the right to say not guilty. The people have a power which the judges have no right to assume. Does this sound like professional heresy? Well let me assure you that an intelligent laity appreciative of the benefits of law and order and peace, and security will not go too far in that direction.

There is one respect in which our jury system may be modified with good effect in civil cases, although in this regard the inconveniences are probably exaggerated. I refer to the old-time requirement of unanimity before a verdict is possible. In civil cases, I am convinced, it would be better to do away with this requirement and allow a less number than the whole to render a verdict. I read somewhere that the number of disagreements amounted only to four per cent of the total number of cases tried before a jury. The trouble is the disagreement will sometimes come after a long trial, and it may be well to reduce or eradicate the four per cent.

The charge is often made that verdicts are too often the result of a compromise among the jury, and stories are told how in fixing damages the sum awarded is sometimes arrived at by having every juror place his figure on a slip of paper and then an average is struck, which is announced as the verdict. Some lawyers seem to think this makes a farce of law and justice. Many verdicts in suits where damages are asked represent a consensus of opinion which is necessarily a compromise. If every one of twelve men has a sum in his mind which differs from that in the mind of every other juror, there must be a spirit of concession and compromise exhibited if there is to be an end to the case. Differences of opinion as to the amount to be allowed as damages are inevitable and compromises are essential in any workable system.

In individual cases here and there the verdict may not correspond with exact justice. Approximate justice is all we can expect in this life. Exact justice in all circumstances would require omniscience, and that is not a human attribute. In every system or method for the determination of disputed questions of fact there will be defects. We must choose that system which shows the fewest defects. And then we must use our ingenuity and devote our earnest attention to the patriotic task of developing and safeguarding that system so as to reduce the defects to a minimum, and thus insure to ourselves and our posterity the right to enjoy life, liberty and the pursuit of happiness.

Anesthetic Machine.

A. W. Adson and G. G. Little, Rochester, Minn., describe an intratracheal anesthesia apparatus, especially adapted to be employed in work on the cerebellum and brain stem, where plenty of pure air under slight pressure is often required. The one described has been constructed to supply a constant flow of air, when needed, a constant ether tension, and a safety valve prevents too great pressure within the lungs. The claim for this machine efficiency, simplicity and ease of manipulation.—(*J. A. M. A.*).

The roentgenogram is frequently the only manner of obtaining objective signs of the disease, playing an important role from the standpoint of diagnosis and prognosis.—Hubeny.

THE DUST PROBLEM IN SCHOOL BUILDINGS.*

JACQUES W. REDWAY, F. R. G. S.
Mount Vernon, N. Y.

Wherever rock, air, and water are in contact, dust also will be present. Exceedingly fine motes refract, reflect, and diffract the sunlight; their effect is the sky. Another sphere of coarser dust, very tangible in its effects on life, extends to an altitude of ten miles, more or less, above the earth's surface. These are the dust particles on which the moisture of the air condenses; they are the parent of fog, cloud, rain, and snow. Ordinarily, they are floating matter of the air; when they fall, it is through means other than their own gravity. Floating dust thus brought to the earth does not of necessity remain on the ground; in due time the force that ordinarily keeps such dust particles in the air, as floating matter, projects them into the air again.

There is still another dust sphere that rarely extends higher than a few hundred feet above the ground—the dust borne by the wind and born of the wind. Doubtless some of the particles in time become floating matter; for the greater part they are kept in the air by the wind—flying when the wind blows and resting on the ground when the wind is not strong enough to remove them. Increasing the velocity of the wind adds greatly to its carrying power; double its velocity and its carrying power is increased sixty-four fold. It will carry sixty-four times as many dust particles of a given size, or it will move particles sixty-four times as great.

In regions destitute of vegetation the volume of wind-swept dust is enormous. It has filled and levelled the valleys of the Rocky Mountain cordillera. It has clogged the rivers to the extent that a stream may find it easier to make a new channel than to clear out one clogged by wind-swept dust.

In regions of greensward, however, the sum total of wind-blown dust is so minute that it rarely affects the transparency of the air. But small as the amount may be, in thickly peopled communities the flying dust at the earth's surface is a menace to health that must be ranked with noxious insects and contaminated water.

Out of door dust is composed of whatever may be loose on the ground or in the streets. In cities practically all of it is picked up from streets and unswarded areas, or is belched from chimney stacks. Here is the result of daily collections covering a period of several years:

Inorganic Matter—Street and sidewalk paving material, loose earthy matter, ash, soot particles, brake-shoe iron, meteoric iron, coal and chimney products.

Vegetable Matter—Horse dung, garbage, leaf dust in season, foliage smut and pollen in season.

Animal Matter—The eggs of insects, fragments of insect anatomy, the scales of moths, and offal.

Biological Matter—Bacteria and micrococci, of various kinds, mainly when the humidity is above 90 per cent., the spo[illegible] and filaments of moulds, and myxobacteria from e[illegible]mentitious matter.

In soft co[illegible] regions the soot and hydrocarbons of the imperfect combustion of fuel form the chief factor of the wind-blown dust. In the vicinity of Pittsburg and Chicago the suspended dust of coal combustion at times has been as much as 200 pounds over every square mile, and the yearly deposit of chimney products has been from 500 to 1,900 tons per square mile.

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*Bureau of Education, Washington, D. C.

Some of the dust that originates out of doors sooner or later is carried indoors. Air currents may drive dust through cracks and crevices that water will not penetrate; and human feet never fail to pick up dust from a dry surface. After a few steps on an ordinary flagstone sidewalk, the imprint of the shoe on a piece of black cloth deposits anywhere from 1,000 to 5,000 particles per square inch of surface. The rest is merely a problem in multiplication.

School buildings accumulate probably a greater amount of dust than other buildings. Dust is not only carried into them; it is created in them. Dust tracked into them results from the tramping of many feet. Little by little it is distributed from entrances to corridors, and from corridors to classrooms. During the night much of the floating dust falls to the floor, but some of it remains in the air. During the day the scuffing of many feet grinds it to exceeding fineness, moreover the same scuffing tends to electrify it, thereby keeping it in the air. Clean air rarely contains as many as 3,000 dust particles per cubic inch. In the air of an ill-kept school room there may be as many as 80,000 particles per cubic inch.

In mechanically ventilated buildings a great deal of dust is drawn into the building at the intake, from the playgrounds and from the adjacent streets. Horse dung almost always, and foliage dust in season is usually in evidence. Most of this is preventable. In the construction of new buildings, the intake should be at least ten feet from the ground. In all ventilating systems there should be dust screens of cloth or of fine wire between the tempering coils and the mouth of the intake. A frame covered with fine copper mesh has certain advantages, but it is expensive; moreover, it permits the passage of fine dust. Cheesecloth is more nearly dust proof and it can be quickly replaced at very small cost. It may be stretched upon the frame with a few tacks and then fastened securely by strips that are screwed to the frame. It should be renewed whenever it becomes clogged with dirt.

The heating plant may be the source of a considerable amount of dust. If any part of the dust carried into the ducts consists of smoke carbon, a discoloration of walls and ceilings close to the ducts will result. Sometimes this is the result of leaks or cracks in the fire box, or in the smoke flue; quite as likely it is due to careless stoking. Dust of this sort is very irritating to throat and lungs.

Furnace dust in the air ducts may be due to leaky flues and joints, but more likely it is due to careless handling of ashes. In the shovelling of hot ashes, a great deal of the dust is erupted, and it is very quickly spread. Wetting the ash in the pit is not without objections, but it certainly prevents a great deal of flying dust.

Of the dust created in school buildings, that which is made by felt erasers, soft crayons, and rough blackboards is probably the worst.

(a) A coarse-grained, rough blackboard, made of ordinary lumber is a hopeless case. When put in good condition by filling and rubbing down, it is apt to cost quite as much as one purchased from the manufacturer. Slated cardboard and canvas in rolls is usually a delusion and a snare. If cemented to the wall, it can be re-slated when worn out, but it cannot be made equal to slate. Slate is by far the most economical substance for blackboards in the long run. Once properly in position, slate will outlast the school building.

(b) Ordinary mineral chalk is a nuisance. Soft crayons are not much better. The so-called dustless crayons are not dustless, but they are about the best in use. Crayons of soapstone are dustless to a much greater extent, but they are expensive, and the marks cannot be readily erased.

(c) The felt eraser is the worst nuisance of all. In many schools its use is forbidden. Damp rags remove the marks from the board without causing the crayon dust to fly. Granted that the cleaning of rags is a difficult matter, the fact remains that flying crayon dust in a class-room is reduced to a minimum when they are used. Granted also that cleaning rag erasers is "fussy" it is the choice between fussiness and dust. Fussiness does not irritate throat and lungs.

(d) Removable metal crayon bins are now a part of the equipment of many classrooms. Inasmuch as they can be cleaned very quickly without creating dust, their use is a positive advantage.

Another source of dust in the classrooms is the bodies and the clothing of the pupils. This dust consists of epithelium cells and epidermis, the latter in very fine particles. Still another kind is lint from the clothing. Usually the lint is very dirty. In some cases it is saturated with substances from the body; in others with plain dirt. In any case, body substances occurring in dust are a menace. The shedding of epidermis is not necessarily due to a lack of cleanliness; more likely it is due to a condition of health. Unfortunately, dust of this sort is not entirely preventable; fortunately there is not much of it.

Electrification is most likely a factor that keeps dust in the air; possibly it is the chief factor. Bodies that are similarly electrified repel one another. If dust particles are charged with the same kind of electricity as that with which the earth is charged, the earth will repel them. Practically we may assume that the charge of electricity is on the surface of the particle. When a piece, say, of rock is broken into smaller pieces the weight of the fragments decreases in much greater ratio than does the surface. When the particles are about one twenty-five thousandth of an inch in dimension the repellent force nearly balances the weight and they become floating matter. Fifteen thousand billion of these particles would weigh a little less than an ounce. Yet this is the size of the finer particles of dust in the school room. In the still air of this laboratory such particles require from six to ten hours to fall from the ceiling to the floor.

But why six hours at one time and ten at another? The explanation is not certain, but it seems to be due to different degrees of humidity. The one thing certain, however, is the fact that dust *does* settle more rapidly in moist than in dry air. During the winter the air of schoolrooms is materially drier than that of a desert. In the Gila desert, during the dry season, the humidity is about 36 per cent. In heated school buildings it varies from 18 per cent to 35 per cent. It is apt to be lowest at nine o'clock and increases until noon. The increment comes from the bodies of the pupils—skin and lungs.

The problem of clean air in school rooms is not to take dust out of the air; it is to prevent dust from getting into the air. To a very considerable extent this can be accomplished without any great expense or trouble. It is merely a matter of reasonable care and thoughtfulness. When a community is trained to think about clean air, it will demand and get clean air. Here are the essential things, all within easy reach.

(a) Screened intakes in mechanically ventilated buildings.

(b) Humidification of the air at the tempering coils before it is delivered to the ducts. This may be done by spraying, or by means of a steam jet. In stove-heated rooms, a vessel of clean water kept on the stove will go a long way in keeping the air humid to the comfort degree.

(c) Clean approaches to the entrances of the building. The approaches cannot be made absolutely dust-free, but they can be cleared of much of the dirt that ordinarily is tracked into the building. A ten-foot strip of rubber matting at the entrance helps wonderfully. It takes much of the fine dust from the soles of the shoes. But the rubber mat must be kept clean, or it fails in its usefulness.

(d) Properly oiled floors. Improperly oiled floors are an abomination. On the other hand, if the oiling is skillfully done, contacts with the floor will not soil or stain the most delicate fabric. Experience has demonstrated several necessary things about the oiling of floors.

First: The floor must be made clean. Oiling a dirty floor insures a dirty floor for all time. It cannot be made clean again unless scraped down below the depth to which the oil has penetrated. An old floor must first be scraped smooth; otherwise it acquires a surface of oil-mud that finally cakes to a hard, black crust which cannot be kept clean.

Second: Application to a new floor should be at the rate of about one pint to one hundred square feet. When the oil has soaked into the wood, any excess of oil should be removed by the application of clean sawdust. Two or three days afterward the floor should be polished with a stiff broom.

Third: After this no further slushing with oil will be necessary. During the term, worn spots may receive a light application with a felt rubber. During the summer vacation the corridors and other worn places should be freely oiled and polished, but no slushing will be necessary. During the term the corridors and entrances require the most attention. Well-kept comb-grained floors acquire a rich mahogany color when properly oiled and polished. Brains as well as oil are required to keep floors in good condition.

Fourth: There is no help for flat-grained floors when they have begun to peel and splinter. Oiling them does not help them in the least; it merely aids in the accumulation of filth within the crevices. Such floors are a menace both to health and to safety.

Fifth: Water-sprinkling lays the dust only while the floor is wet. It not only injures the floor; it also creates more dust after the floor has become dry. Clean sawdust, oiled in the proportion of about a pint of oil to the half bushel of sawdust, is the best material for "sprinkling" very dusty floors. This mixture is the essential of the various commercial "no-dust" compounds.

Dust on an oiled floor does not fly readily when the floor is swept, neither does the tramping of feet during the marching exercises cause it to fly to any great extent. What is still more important, if projected into the air, it falls very quickly. The reason, therefore, may or may not be obvious; the fact to be emphasized is the fact that oiled floors keep the dust on the floor and out of the air.

Vacuum cleaners have proved successful to a limited degree in cleaning the floors of school buildings. One reason is the fact that janitors have not been trained to use them. The chief reason, however, is the question of time. It requires a longer time to clean a room with a vacuum cleaner than with a floor brush. Perhaps an expert demonstrator might clean more quickly with a vacuum cleaner, but this must not be taken as a reflection on the janitor's capability. For cleaning the walls, window-recesses, and niches which neither the brush nor the dusting cloth can reach, the vacuum cleaner is a necessity.

The air of school rooms may be made much cleaner and more wholesome than it now is merely with the exercise of care and intelligence. There are still over-conservative people who claim that the dangers of dust are exaggerated, and perhaps this may be true. Certain it is, however; the absence of dust will harm no one. A community usually gets the school administration it deserves, but not necessarily one that it needs.

TREATMENT OF DRY CATARRH OF THE NOSE.

HAROLD HAYS, M. D., F. A.C. S.

ASSISTANT SURGEON IN OTOLOGY, NEW YORK EYE AND EAR INFIRMARY; CLINICAL INSTRUCTOR IN OTO-LARYNGOLOGY, COLLEGE OF PHYSICIANS AND SURGEONS.

New York.

Whether "dry catarrh," atrophic rhinitis, rhinitis sicca, or ozena, is caused by a bacterial infection of the nasal mucosa or not remains to be seen. Recent investigations seem to prove that certain bacteria continue the conditions even if they do not cause it. The result is that various vaccines have been administered, which, in certain instances seem to have a beneficial effect. Horn of San Francisco and Dixmand Burchill, of New York, are reporting good results.

To my mind dry catarrh is an aftermath of a sinus disease which has begun early in life. Many patients afflicted with this condition will tell you that their "nose troubles" began in early childhood. The prompt removal of obstruction to secretions from the sinuses (i. e., removal of tonsils and adenoids), and the proper treatment of the nasal mucosa at this early date, will inhibit the destruction of the normal ciliated epithelium.

One must realize that if the sinuses of the nose are even mildly infected over a long period, the resultant constant irritation to the mucous membrane of the nose will lead to dire results. At first a hypertrophic condition of the mucosa occurs, which later destroys the superficial ciliated epithelium which later is replaced with squamous epithelium. Sooner or later crusts form which, if they contain saprophytic organasma, cause a decidedly distressing odor.

Thousands of remedies have been suggested to relieve dry catarrh. Few of them effect a temporary cure—none of them seem to effect a permanent cure.

We have a secondary condition to deal with and must therefore use remedies to relieve the symptoms rather than to cure the disease. For five years I have been treating a patient with dry catarrh almost daily during the winter. Last year I found a sphenoidal sinus disease in the right side, took a culture of the pus from the sinus, had an autogenous vaccine prepared, administered it and relieved the patient for the past winter. In the late spring the symptoms returned. Every other conceivable remedy had been tried.

There are two main symptoms of which the patients complain—crusting in the nose and the odor from the nose. Our object then should be to relieve these two symptoms.

It is useless to prescribe home remedies for these patients unless the patients are made to understand that

no remedies do any good unless the mucous membrane is first thoroughly cleansed and all crusts removed. Direct medication would do as much good as applying a furniture polish over the body of a muddy automobile. The mud must be removed first. My usual custom is to wash the nose thoroughly with a hot saline solution both forward and back—through the nostrils and post-nasally. A cotton tipped applicator should then be used to remove crusts that will not come away with washing. After cleansing, one can make topical applications to the mucosa. The best of these are cresatin (a non-corrosive carbolic preparation), 2 per cent. scarlet red in vaselin or albolene and 20 per cent. argyrol. After such applications, the nose should be thoroughly sprayed with some non-irritating oily solution. At home I instruct the patients to wash out the nose with a solution in a fountain syringe—a tablespoonful of equal parts of table salt, boric acid and bicarbonate of soda, with a pinch of menthol to a quart of hot water. After the nose has been thoroughly cleansed, an oily spray must be used to protect the sensitive mucosa.

Thousands of remedies have been tried in "dry catarrh." Thousands of patients have tried them with discouraging results. Yet the relief or cure is not hopeless. It is merely a matter of finding the suitable remedy for the individual case.

11 West 81st Street.

Special Article

The Chemotherapeutic Treatment of Gonorrhea.

J. E. R. McDonagh, surgeon to the London Lock Hospital, discussing gonorrhea in the *Practitioner*, May, 1918, believes too frequent and too strong irrigations, too much instrumentation, and too much "milking" of the penis by the doctor and the patient are the chief causes of the multitude of cases which never get cured. Septic conditions of other organs in the body are not handled so roughly and injudiciously as gonorrhea, for in these we have learned that treatment is summed up in the words rest and cleanliness. In recent years, some of us have begun to realize that the cure of inflammatory conditions is to be sought via the blood stream, and that local treatment is of only secondary importance. McDonagh has, therefore, determined upon the use of manganese for two reasons; first, because it is the most important oxidase in plant life, from which animal life in the process of evolution has doubtless sprung; secondly, because it is one of the few metals which are capable of existing in the form of two easily reversible hydroxides.

Parasites, to save their active oxygen, exhibit a strong reducing action ($HO.OH + H^{\circ}$) on their surface. The protein particles will the parasites by oxidation, an action which probably takes place in the following way. The active oxygen (OH') neutralizes the active hydrogen (H°) on the surface of the parasites. The parasites, deprived of their active hydrogen, are unable to convert their tri-valent metallic hydroxide into the di-valent form, with the result that the formation of active oxygen is prevented, because it is only the di-valent metallic hydroxide, which acts catalytically as the oxidase. It is only the metal and metalloid which are catalysts, while the peroxide is capable of being used up. This is what apparently happens to the protein prtices when a diseases becomes chronic. As the peroxide is formed by sulphur, it will be understood why he introduced intramine, a benzine sulphur compound, and advised its use previously to that of an oxidizing agent in all chronic infections. What it comes to is this, that oxidizing or metallic drugs are most important in the acute and subacute stages, while reducing or metalloid drugs are most important in the chronic stages; but as reduction is only a subsidiary action to oxidation, in all stages oxidizing drugs are required.

Urethritis.

The whole success of the treatment of urethritis depends upon the celerity with which a patient begins his treatment after the onset of the discharge. Never more than two irrigations *per diem* should be used, and in many cases only one is required. No irrigation should ever be so strong as to cause pain, or a burning sensation when the patient next passes his water. Furthermore, no irrigation should be sent back into the bladder, so long as the anterior part only of the urethra is involved. Finally, the prostate, except in a few obvious instances, should never be examined, and no instrument should be passed *per urethram* until the discharge has quite or almost stopped.

In acute anterior urethritis, the patient should irrigate twice a day with a 1:8,000 solution of potassium permanganate (irrigation A). An alkaline mixture, containing 30 grains of sodium bicarbonate, should be taken daily, together with some aperient medicine. Attention should be directed to the diet, and the patient prohibited from taking active exercise. It is also a good plan to wear the penis on the abdomen, for this position diminishes venous congestion. When the discharge has become mucopurulent, the strength of the potassium permanganate solution should be increased to 1:4,000 (irrigation B), and when the discharge is slight or there are threads in the urine, the patient should irrigate once or twice a day with a 1:8,000 solution of zinc permanganate (irrigation C).

When both portions of the morning urine (two-glass test) are clear, irrigations should be stopped, and the patient made to take active exercise. If no discharge is visible during the next three days, the patient can be discharged, provided a rectal and a urethral examination show there is nothing abnormal. There are three methods of injecting colloidal manganese intramuscularly: (1) in small doses; (2) in gradually increasing doses; (3) in a concentrated form.

The third course is safe and gives by far the best results. The concentrated form is supplied in two solutions, the one clear, the other light yellow or brown color, which have to be mixed in the syringe just before being injected. The other forms of manganese are apt to become oxidized if exposed to the air, and when this change occurs the therapeutic action of the drug is diminished. In the concentrated form, oxidation does not take place if the mixture is injected immediately; it is, moreover, alkaline, and 0.5 cc. corresponds to 1.5 cc. of the ordinary emulsion.

If the discharge has not ceased by the fourteenth day, the patient should take internally 60 grains of sodium bicarbonate *per diem*, and receive on the same or following day 0.25 cc. of a 0.2, per cent or 1.5 cc. of a 0.04 per cent emulsion of colloidal (collosol) antimony. An alternative course is to stop all intramuscular injections for a week, and then to repeat at somewhat shorter intervals a similar course of manganese injections. If colloidal antimony is used, a second injection of double the initial dose should be given, after an interval of three or four days.

Should the patient during a course develop acute posterior urethritis, cowperitis, prostatitis, vesiculitis or epididymitis, all treatment must be stopped, the patient confined to bed if possible, and put on large doses of sodium salicylate and potassium iodide or colloidal (collosol) iodin. In four or five days' time the patient should irrigate the whole urethra, take internally 60-90 grains of sodium bicarbonate *per diem*, and be injected with another course of colloidal manganese. Previous treatment with manganese does not militate against its value when it is again employed, and the varied use of manganese and antimony helps the action of the other. Another plan, very efficacious if time is an important factor, is to inject 2.5 cc. of intramine the moment a complication sets in, because the onset of a complication under such circumstances usually signifies the too active use of the oxidizing agent.

In acute posterior urethritis the patient should irrigate the whole urethra with irrigation A twice a day, take salicylates internally, and attend to his bowels and diet. When the pain and frequency of micturition have disappeared and the discharge has diminished, 60-90 grains of sodium bicarbonate should be taken internally, and the whole urethra washed out twice a day with irrigation B. When the discharge has become

mucopurulent or only a gleet in the morning is visible, the whole urethra should be irrigated with irrigation C once or twice a day. When the discharge has completely stopped, the prostate and vesiculae seminales should be examined, and massaged twice a week if found infected. The urethra should be examined and, if necessary, dilated two or three times a week.

So far as the injections are concerned, I usually proceed as follows: First day, 1.0 cc. Mn., or 0.5 cc. conc. Mn.; third day, 1.0 cc. Mn., or 0.5 cc. conc. Mn.; fifth day, 1.5 cc. Mn., or 0.5 cc. conc. Mn.; ninth day, 2.0 cc. Mn., or 1.0 cc. conc. Mn.; thirteenth day, 2.5 cc. Mn., or 1.0 cc. conc. Mn. If after this the discharge still continues, I prescribe potassium iodide or colloidal iodin (3iii ter p.c.) internally, treat the urethra locally more vigorously, and inject the following doses of colloidal antimony; eighteenth day, 1.5 cc. of the 0.04 per cent or 0.25 cc. of the 0.2 per cent emulsion; twenty-second day, repeat same dose, or double it. If disease is still active, intramine should be instilled into the urethra and an intromuscular injection of 2.5 cc. prescribed on the twenty-sixth day, repeated on the thirty-first day, and followed by 3 cc. Mn., or 1.0 cc. conc. Mn. three days later.

Recurrent cases of urethritis should be treated like ordinary cases of posterior urethritis, and require no further comment.

In some cases of urethritis the discharge rapidly clears up, and a cure appears to have been made in less than a week, but after two or three days' rest from irrigations the discharge re-appears, due to a localized littritis; therefore, no case should be discharged too quickly, because if the littritis is attended to, there is no risk of the inflammation spreading or of a complication developing.

A common complication is peri-urethral abscess, and is troublesome because it may lead to a urinary fistula, which in some cases becomes permanent. Intramuscular injections of manganese will relieve the pain in 24 hours, and cause the swelling to abort if it contains no pus, or to point immediately if there is pus. Therefore, in all cases, provided manganese is injected quickly enough, an incision is never necessary.

These colloidal preparations are extremely useful in those cases of urethritis, in which the whole of the mucous membrane has become spongy as a result of too active irrigation treatment. They also relieve the pain and discomfort in cases of cowperitis and prostatitis. As a rule, the subjective and objective symptoms of a cowperitis disappear after the second injection of manganese. If the gland contains pus, the injections will bring it to the surface, and after a tiny incision the process will resolve. This is exactly what happens in cases of bubo, a condition by no means always the result of a soft sore infection, for it may occur in gonorrhea, scabies, impetigo, etc. If the lymphatic glands are not purulent, manganese will cause the trouble to abort, but if they contain pus, pointing will immediately occur and resolution is just as rapid after a small incision has been made.

Prostatitis responds in the same way as cowperitis and bubo, and it is extraordinary how quickly the subjective symptoms disappear in cases of prostatic abscess. One of the most troublesome complications of an acute or subacute posterior urethritis is retention, a condition due to inflammation of either the verumontanum or the middle lobe of the prostate. Although under ordinary circumstances a catheter has to be passed, as often as not the process has to be repeated once or twice daily for several days, which in an inflamed urethra may prolong the gonorrhea for several weeks or even months. In four cases an injection of manganese so relieved the patient that it was only necesary to draw off the urine once. In two cases of cystitis, four injections of manganese enabled the patient to be discharged in a fortnight. In one case of hemorrhagic prostatitis, in which blood had been passed *per urethram* for ten days, the hemorrhage ceased 24 hours after 1,0 cc. of the concentrated colloidal manganese. The author refers to the clear or slightly opaque watery discharge and to the threads in the urine, which may persist for months and even years in patients who have had several relapses. They are often signs of over treatment, and should not be looked upon as necessarily indicative of active infection. Another point to remember is that over 90 per cent of the so-called fresh infections are really relapses of an uncured initial attack. When the urethra is examined for the first time a gum-elastic olivary headed catheter should be passed. The frequent use of this instrument will soon give the observer, by the sense of touch, the means of ascertaining if there is any folliculitis or perifolliculitis. Only when such a lesion has been diagnosed in this way should a metal instrument be passed.

Vesiculitis.

Inflammation of the vesiculae seminales is a more common complication than is usually supposed. Vesiculitis is frequently the starting point of arthritis, and is usually the seat of mischief in those cases which present a persistent urethral discharge, in spite of every form of treatment having been tried. In the acute cases, the patient usually complains of pain in his back, which he generally refers to his kidneys, there is frequency of micturition, and a heavy purulent precipitate in the urine. In the subacute cases the urine is full of flocculi, and in the chronic there may be a precipitate of particles, which resembles dust or boiled sago grains. Bimanual examination with one hand on the pubis, and the forefinger of the other in the rectum, will reveal in the acute cases a baggy mass above the prostate, and in the subacute and chronic an ill-defined swelling or cord, which appears to be continuous with and extended up from the apex of the prostate.

Massage in all cases is necessary, the accompanying urethritis should be attended to, and manganese and intramine prescribed in the manner suggested for epididymitis.

Epididymitis.

As a rule, an epididymitis follows upon an infection of the prostate or the vesiculae seminales. It is frequently accompanied by a deferentitis, which causes the patient abdominal pain and sometimes leads to the diagnosis of appendicitis being made. When the vas deferens in the scrotum is inflamed the surrounding structures are usually involved in the exudate, and to this condition the term funiculitis is applied. Before the testicle becomes swollen and acutely painful, the patient complains of heaviness of the organ and pain in the groin. If the patient is put to bed, irrigations stopped, ichthyol applied locally, salicylates given internally, and the testicles well supported, the following course of manganese will prevent the inflammatory condition from developing. First day, 2 cc. Mn., or 0.5 cc. conc. Mn.; third day, 3 cc. Mn., or 1.0 cc. conc. Mn.; and fifth day, 3 or 4 cc. Mn., or 1.0 cc. conc. Mn. On the second or third day the subjective symptoms usually disappear, and the patient is able to get up and resume his irrigations. If the epididymitis is well developed before the patient comes under theatment, manganese is best prescribed as follows: First day, 1.5 cc. Mn., or 0.5 cc. conc. Mn.; second day, 1.5 cc. Mn. or 0.5 cc. conc. Mn.; fourth day, 2 cc. Mn., or 1.0 cc. conc. Mn. In many cases the pain disappears in 24 hours, and the swelling rapidly diminishes in a few days. If this happens, then 3 cc. Mn., or 1.0 cc. conc. Mn. should be injected on the sixth day, and 3 or 4 cc. Mn., or 1.0 cc. conc. Mn. on the eighth or ninth day. If the improvement is not rapid, 2.5 cc. intramine should be injected on the sixth day, repeated on the tenth day, and succeeded by 3 cc. Mn., or 1.0 cc. conc. Mn. on the thirteenth day. In the cases which rapidly improve under manganese, the course should be followed up with one injection of intramine and then by another one of manganese, because intramine prevents fibrous tissue formation, as well as the hard nodule in the lower pole of the epididymis; this, if bilateral, may render the patient sterile, and often harbors dormant organisms, which are liable to re-develop and cause one or several local recurrences for several years to come.

In subacute or chronic epididymitis, it is best to adopt the following course: First day, 2 cc. Mn., or 1.0 cc. conc. Mn.; third day, 3 cc. Mn., or 1.0 cc. conc. Mn.; sixth day, 2.5 cc. intramine; tenth day, 2.5 cc. intramine; thirteenth day, 3 or 4 cc. Mn., or 1.0 cc. conc. Mn. If manganese is used incautiously in cases of urethritis, the onset of epididymitis may be hastened. In these cases it is best to give an injection of intramine at once, for it supplies the peroxide necessary for the oxidizing action of the manganese. Three days later, 2 cc. Mn., or 0.5 cc. conc. Mn. should be prescribed, followed by manganese or intramine according to the course the case takes. In every case in which the procedure can be adopted, it is a good plan to inject 1.5 cc. colloidal silver into the swollen epididymis and to repeat this two days later.

Another excellent maneuver is to puncture the epididymis with a sharp-pointed bistoury as soon as the swelling appears.

He has treated 79 cases of epididymitis on the above lines and in the majority the patients were able to be up and to carry on their irrigations on the third day. In several of these cases no nodule remained behind in the epididymis.

It must be remembered that the chemotherapeutic treatment of gonorrhea is only an adjunct to the existing methods of treatment; therefore, the conjoined use of vaccines is not contra-indicated.

Arthritis.

Gonorrheal rheumatism, including arthritis, is a more common complication in military than in civil life, and in the former it frequently appears with the first attack, indeed, a few days after the onset of the discharge. In soldiers the condition is particularly severe, and, in many cases, ordinary treatment renders the patient unfit for active service again.

In combatant soldiers especially, wasting is rapid, and the arthritis is often accompanied by keratosis blennorrhagica, affecting either the hands or feet, or the penis only (balanitis circinata). In these cases the patient may have bilateral conjunctivitis, and exhibit a slight lymphocytosis in his cerebrospinal fluid, which rarely exceeds 16 cells per c.mm. As a rule a patient with arthritis has either a prostatitis, a vesiculitis, or both, but extremely seldom an epididymitis. When the arthritis sets in, the discharge stops; indeed, the presence of arthritis may result in an apparent cure of the urethral trouble. If the arthritis develops while there is still a purulent urethritis, it is best to treat the patient with manganese first, and then with intramine if the joint trouble has not resolved, as follows: First day, 1.5 cc. Mn., or 0.5 cc. conc. Mn.; third day, 2 cc. Mn., or 0.5 cc. conc. Mn.; sixth day, 3 cc. Mn., or 1.0 cc. conc. Mn.; ninth day, 2.5 cc. intramine; thirteenth day, 2.5 cc. intramine; sixteenth day, 4 cc. Mn., or 1.5 conc. Mn. In those cases of arthritis in which the discharge has vanished, or only persists as a gleet, the following course is the most serviceable: First day, 2.5 cc. intramine; fourth day, 2.5 cc. intramine; seventh day, 4 cc. Mn., or 1.5 cc. conc. Mn. The day after the first dose of intramine, the pain and swelling may disappear and the patient may be able to move his joint for the first time for some days or weeks. Owing to too free movement the joint may become a little stiffer a day or two later, but quickly becomes normal again after the second injection. As the fluid rapidly disappears, adhesions tend to form equally quickly, therefore, it is imperative to commence massage, etc., as soon as possible. A gonococcal joint should never be kept rigid unless it is purulent, a condition which is fortunately very rare. If there is much fluid in a joint it should be aspirated, but this procedure is seldom called for.

Should a gleet still persist after treatment, the urethra should be dilated and the prostate and seminal vesicles attended to, in order to prevent a recurrence of the arthritis. Intramine injected *per urethram* in these cases is very useful, but care should be taken that it does not get on to the scrotum or skin of the penis, for it is apt to cause a sulphur dermatitis. If the pain of intramine injected intramuscularly is objected to, the intravenous route may be employed, but the results obtained are not so striking. If the latter is the chosen course, it is best to proceed as follows: First day, 100 cc. colloidal iodin intravenously; second day, 100 cc. intramine (0.1 per cent emulsion); sixth day, 100 cc. intramine; eighth day, 4 cc. Mn., or 1.5 cc. conc. Mn. Intramine usually produces a smart rise in temperature, sometimes to 104° F., but no attempts should be made to reduce it, because, generally speaking, those cases do best in which there is the greatest reaction. Up to the present McDonagh has treated 64 cases in the way described with uniformly good results. Out of this number 11 had keratodermia blennorrhagica, 22 bilateral conjunctivitis, and 3 developed iritis after conclusion of the treatment. In 41 cases it was the patient's first attack of arthritis, and in 38 the first attack of gonorrhea. In all cases it is advantageous to give colloidal iodin internally (3iii ter p.c.) and to apply Scott's dressing, colloidal collosol iodin oil, or unguentum guaiacol (30 per cent) to the affected joints. Some of the most interesting points in connection with gonorrheal arthritis are that the discharge is often slight, that the onset of arthritis may precede a discharge in a relapsing case, and that recently cases have been common, in which an extremely severe polyarticular form has begun as early as the fourth day in the patient's initial attack. In cases of gonococcal endocarditis and septicaemia again, the discharge has been and often is insignificant. However well arthritis cases do under treatment, they should never be discharged before a thorough examination of the seminal vesicles and prostate has been made, because gonococci may lurk in these organs for years, and be the cause of recurrent iritis, without necessarily exhibiting local signs of activity.

Duration of Treatment.

Under ordinary treatment, the average stay in hospital of gonorrhea patients is 49 days. About 15 per cent relapse to the same hospital, a figure which is valueless, because it is impossible to say how many have relapsed to other hospitals, how many men who would have relapsed are killed, etc. Probably not 5 per cent of the cases discharged are really cured. About 50 per cent develop prostatitis, 7 per cent vesiculitis, 15 per cent epididymitis, and 2 per cent arthritis. The result obtained by manganese (excluding the concentrated form) and antimony in 500 cases, 200 of which had been under ordinary treatment first and 300 of which had not been previously treated, were as follows: Of those which had had treatment the average stay in hospital was 41 days. When manganese and antimony were prescribed, it was reduced to 13 days. The reason the figure here is high, namely, 54 days, is because only those cases which were hanging fire under the ordinary treatment were taken in hand. The average stay in hospital of the new cases was 17 days. The total average relapse rate was 10 per cent, and the period at which the relapse occurred averaged four days after the patient was discharged. The relapses were all treated with the drugs, and their average stay in hospital was 12 days.

In the 300 new cases, 28 per cent developed prostatitis, 1 per cent vesiculitis, 4 per cent epididymitis, and there was no case of arthritis. Those cases did best which had an anterior urethritis only on admission, and if such cases are always treated carefully and individually, there is no reason why the posterior part of the urethra should become involved, or a complication develop. In those cases which relapse, a localized littritis is usually to be found, and this explains why most of the cases relapse within a week or being discharged. Having now treated 100 cases with the concentrated manganese, the following figures show the results obtained. The stay in hospital averaged 12 days; 9 per cent developed prostatitis, 2 per cent epididymitis, while there were no cases of vesiculitis or arthritis.

War Medicine and Surgery

Kineplastics, or the Construction of Motor Amputation Flaps.

At the Royal Society of Medicine, London, on May 30, Prof. V. Putti, director of the Rizzoli Institute, Bologna, as spokesman of a group of Italian orthopedic surgeons, gave an account of the construction of flaps in amputation stumps capable of independent movement and designed to reduce in this way the resulting disability. Allusion was made by Profesor Putti to the work of German and Austrian surgeons in the same field, and as this has so far not been made accessible to allied readers we give a brief résumé of a monograph on an "Artificial Hand Capable of Voluntary Movement," published by Jul. Springer (Berlin) in the autumn of 1916, written as a guide for surgeons and surgical instrument-makers by Prof. F. Sauerbruch, until lately director of the surgical clinic at Zurich, and Dr. A. Stadler, physician to the Singen Hospital. Sections on surgical anatomy are contributed by Professor G. Ruge and Professor W. Felix, from the Zurich Institute of Anatomy. No claim is made in the book that the goal of an artificial voluntary hand has been attained, but it was issued in response to the need for some account of the surgical and technical work already done.

The authors point out that in the writings of early times no mention is made of any kind of artificial instrument supplied to replace the loss of a limb, with the sole exception of a certain Marcus Sergius, who, according to the younger Pliny, having lost his right hand in the Second Punic War, had an iron one fitted in its stead. The first artificial hand capable of independent movement was designed in 1835 by Ballif, a surgical technician and dentist in Berlin, shoulder and trunk movemets being utilized to initiate the hand movements, a method also followed in later models. Nearly ten years ago Elgart connected the real tendons of a long forearm stump with the make-believe tendons of an artificial hand, unconsciously following an idea already worked out by Vanghetti ten years earlier. Nagy further developed this idea in the case of a lost finger, using the tendons enveloped in skin to provide the motive force.

The anatomical aspect of the subject is closely discussed in relation to the sources from which the upper limb derives its power of movement, defining the relation between the length of the stump and the force available for transmission to the artificial hand. One of the most important points for the surgeon to bear in mind is the preservation of those muscles which give certain special movements to the stump. Anatomical relations are such that in any area of available muscular power in the arm or forearm, the preservation of both flexor and extensor action is always possible. To unite flexors and extensors, with their differing nerve-supply, to form a single motive force is opposed to natural physiological principles. It may be possible to preserve more than two sources of movement, the surgeon using his judgment as to whether the subject will be able to utilize to good purpose the muscular power thus conserved. In general, the first aim will be to perfect a simple model before advancing to a more complex.

Before coming to a detailed account of their methods the authors strike a note of warning in regard to exaggerated hopes; even in the most favorable circumstances the usefulness of an artificial hand must remain strictly limited. No instru-

ment can afford the sense of touch, nor can the delicacy of movement provided by muscle co-ordination be called into play. In the living hand each single effort involves a corresponding movement in the neighboring joints; certain grips are invariably accompanied by rotation of the forearm. Since the variety of voluntary movement attainable in an artificial hand must needs be confined within limits, at all events in the early stages of the work, attention must be concentrated on reproducing in the prosthesis only the simple movements of the natural hand. Surgeon and mechanic should both possess an exact knowledge of the anatomy and physiology of the hand and of the muscular apparatus. Astonishingly little attention seems to have been paid in the past to important anatomical facts. Surgeon, anatomist, and mechanic should consider together at the outset the possibilities and limitations of the individual case.

The surgical section deals with the two main problems: (1) The formation of an automatic flap; and (2) its adaptation to move an artificial hand.

1. Much research is required to ascertain the functional possibilities of the muscles retained. For a period after amputation the muscles of a stump remain powerless and daily exercise is necessary for a renewal of function, starting with passive movements and followed later by voluntary movement under supervision. This exercise should never be omitted except when inflammation is present and tends to increase, or in case of an unsatisfactory general condition. Where a long or moderately long arm-stump remains, flexor and extensor flaps are readily formed. In the forearm the operation is more difficult and the chances of healing not so favorable, but there is the compensating advantage that all available power can be used exclusively for the artificial hand. A single muscle suffices in the case of a hand-stump which retains some movement of its own.

2. The proper attachment of the flap to the artificial hand presents much difficuty. The earlier method of a sling formed by tendons overlaid with skin has been discarded as both complicated and unsafe. A better plan is a flap containing tendons and forming a sling. A first attempt was made to bore a canal through the muscular flap by means of a thick needle, to epithelialize this canal later and insert a lead probe, but this proved impracticable. If two symmetrical muscular pads form the stump they can be united at their ends to form a canal well protected with skin. For muscular flaps not amenable in this way the method which has now superseded all others is to make a well padded and protected canal lined with skin and inserting within it a thick rod.

The operative work being completed, it remains to train and develop the muscles of the stump with much diligent persistence. Various methods are employed. Cords attached to each end of the rod which passes through the canal may be held and pulled upon by the other hand to provide resisted movements for the muscles of the stump. Or a weight is suspended from the stump by means of pulleys, the size of the weight being increased from time to time. The fear that the use of a weight might gradually cut out through the muscular pad was not verified in practice; the contrary was indeed, found to be the case, the flap becoming stronger and firmer.

The actual fitting of the artificial hand has claimed much attention. No satisfactory model was found on the market, and the search has been hindered by the prevailing war-time lack of materials. The authors find the most practical model to be that of Prof. Stodola, constructed by Windler, of Berlin. The hand consists of a massive palm and five fingers, each in three parts. Tendons of wire or cord are fastened to the tips of the fingers, passing through them to the palm, where they are united to a rod provided with rollers at each end. A pull on the rod closes all the fingers on to the palm, but if an uneven object is grasped the fingers accommodate themselves to its varying diameter. The thumb is immovable and slightly extended so that an object can be pushed in between it and the fingers.

The complete prosthesis in the case of a 13 cm. long arm-stump is shown in the original article. The apparatus consists of three parts: a shoulder girdle, a bucket for the upper arm, and the artificial forearm with hand attached. The shoulder girdle resembles a horse-collar and fits exactly over the shoulder-blade, the summit of the shoulder, and the chest wall, being kept in place by straps passing over the other shoulder. The arm bucket is made of leather fitted exactly to the stump and hinged on the shoulder girdle. On the lateral and mesial surfaces is a curved strip of metal, to which the hollow leather forearm is connected by a hinge-joint. A cord passes from the back of the shoulder girdle to the upper third of the forearm, and when the stump is raised this cord is shortened and the forearm is flexed. The forearm may also be flexed by raising the shoulder. From the rod which passes through the canal in the muscle flap a cord or wire passes to the artificial hand. The cord runs on rollers, and is provided at its upper end with a spring, so that the slightest movement of the muscle is transmitted at once to the hand. A pull with the muscle flexes the fingers, while a vigorous contraction closes the fist. This power, combined with flexion of the forearm, produces all the most common movements of the natural hand and arm.

The special advantage claimed for this prosthesis is that in every position of the forearm the fingers can be flexed by an active movement. The first can be closed by raising the stump and bending the forearm vigorously. Light articles can thus be picked up and held and heavy objects can be carried. Much practice is required, however, to learn to close the hand at the right moment to grasp an object.—(*Lancet*, June 8 1918.)

Heart Reserve in Military Training.

Alfred Johnson says that in the medical examination of recruits for the army to designate their category, and later in noting their general fitness or otherwise as a result of training, the condition of the heart often proves to be the final index of the man's capabilities for military service. Defects such as impaired functions of the limbs, hernia, chest, kidney, and nervous troubles, etc., are usually estimated at their true value, because of the comparative ease of accurately investigating their condition of activity.

It is not wished in any way to minimize the importance of careful observation by inspection, palpation, percussion, and ausculiation of the organ, noting the condition of the blood vessels, and from these data forming an estimate of the condition of the heart. What it is wished to emphasize is, that the estimate found by these methods applied in a room, when the patient is practically at rest, is often a source of serious error in predicting the man's capacity for military training.

Too much importance seems to be attached to the presence or absence of valvular trouble, or murmurs, and too little to what the actual capabilities of the heart may be, and the amount of reserve that it can draw upon for military training.

The present methods of army examination, unfortunately, often place men in a category in which they prove quite unable to stand the strain of training and the duties of that category, on account of insufficient heart reserve, and they are passed from hospital to duty and duty to hospital until they are finally discharged from the army. This involves a useless expenditure, which might be better employed under these conditions.

These men with insufficient heart reserve might be much better employed in civil life, where experience has taught them the limitations of their strength. If, however, heart reserve was taken into account in the process of training, and this reserve never overdrawn upon, very many of these men might be turned into effective soldiers instead of being broken down by an arbitrary system of hardening.

Again, if the gauge of heart reserve held the important position it deserves, many men with ample heart reserve might be placed in a higher category than the one they occupy, with the certain knowledge that they would be able to stand the strain of the training of that category.

What is required is some fairly reliable method of checking the findings of examination of the heart under restful conditions, by ascertaining its capabilities under strain and load. The heart is the most nearly mechanical of the vital organs. It is obvious that it would not be a reliable test to judge the capabilities of a motor engine when it was just ticking over with a minimum load: it must be tested under varying conditions of load and strain to find a correct estimate of its capabilities. So with the heart: the measurement of the soldier's heart reserve under varying conditions of load and strain would do much to make our army more effective. Over-training is more disastrous than under-training. The amount of training that can be undertaken with progressive benefit depends on the state of the myocardium. It must be a correct balance between the *vis a tergo* and *vis a frontis*.

In carrying out a scheme for finding the limitations of heart reserve, standard and varying physical strains would be necessary for the test. Marching progressive distances, parades, physical exercise to pick out the weaklings and, for those who showed ability for severe strains, doubling on the level and uphill.

An old but reliable test might be applied: that of taking the pulse-rate before the test, allowing three minutes to elapse, or for the more severe strains five minutes after the test, and then timing the pulse-rate again. If, after comparing the results, it is found that the pulse-rate is accelerated, this man is doing too much; repetition will only lead to further dilatation of his heart, and he should be put to training involving less strain.

The test for any but those who have managed the severest

tests should be applied at intervals of from one week to one month, according to the requirements of the case. Thus, each man would be trained according to his capabilities, and there would be no opportunity of deceit or fraud on the part of the man under observation.

A method such as this would not throw much extra work on the medical department, but would rather turn their energies from dealing with men broken with bad training to the prevention of crowding the hospitals and the everlasting "Attend B." (or no duty). Medical orderlies could easily be instructed in timing the pulse accurately, and referring those who failed in physical test to the medical officer.

In connection with heart reserve, the differential stethoscope of Dr. O. Leyton is of the utmost value in determining the amount of heart reserve where there are no adventitious heart-sounds or valvular trouble. This stethoscope enables the examiner to measure the sound values, and indicates a want of heart reserve when the first sound at the apex is approximately less than double the second sound at the base. In this way the ratio between driving force and resistance and the condition of the myocardium may be gauged.—(*Practitioner.*)

Speech-Reading for the War Deaf.

Clarence John Blake, of Harvard, says:

The study of the means to be employed in dealing with the cases of war deafness, which constitute a part of the disability incident to the struggle upon which this country has entered, must necessarily include the provision of a substitute, or supplementary, means of communication between individuals other than that through the medium of hearing.

This, whatever the degree or the character of the impairment of hearing, whether it be a total loss of sound perception or a distortion of the auditory impression of the spoken word or sentence, is of importance, because it supplies a medium of communication in proportion to the individual need of the patient on the one hand and aids in establishing that sense of helpful relationship which must be one of the welcomes extended to those who have wagered their all in the defense of those principles for which this nation stands and by the preservation of which it continues to exist.

From the point of view of the surgeon, cases of war deafness fall into three general categories: Those in which there has been a previous disease of the ear; those in which the injury to the sound-transmitting apparatus of the ear originated in participation in war; and those in which, without objective structural injury, there has been the establishment of slowly progressive deleterious changes in the deeper-seated portions of the organ of hearing incident to protracted exposure to loud noise. In addition to these, there are the cases of apparently complete loss of hearing, often accompanied by loss of speech and other functional symptoms which are the result of a profound impressional shock to the nervous system, without auditory implication, for which no aural treatment is required, cases coming directly within the domain of neurology, but offering opportunity for helpful service on the part of the teacher of speech-reading under the direction of the neurologist.

From the point of view of the teacher, the differentiation should be not only that called forth by the degree of impairment of hearing, but by the individual adaptability of the pupil and the degree in which he will need to apply his acquired facility in the new means of appreciation of the spoken word when he faces the ordeal of trying to again take his place in the wage-earning competition of civil life. In this respect the teacher who can best visualize the influence exerted upon a well-stabilized life of peaceful continuity by the interposition of a period of intense excitement and activity and the interjection of visual and auditory impressions of a most subversive character, will be the one to whom the medium of instruction in speech-reading will become the path leading to a broad field of usefulness, not only in helping the returned soldier or sailor, handicapped by an impairment of hearing, to again take his place in community life, but by making the teaching a medium of expression of appreciation of the service rendered.

The learning of speech-reading by the returned soldiers and sailors who need such instruction will be more or less important to all, and absolutely necessary to some, as a part of the effort at rehabilitation, and this work should be undertaken by the teacher chosen for that purpose, under authority, and by all others to whom the chance may later fall, in the true spirit of teaching as a contributive opportunity.

The application of speech-reading to the war deaf who will return to this country for repair, rehabilitation, and re-education can be made to cover a wide, a varied, and a helpful range, according to the degree of impairment, monaural or binaural, the possibility of surgical repair with a view to the betterment of intra-aural sound transmission, the consideration of the concomitant impairment of sound perception and the degree to which the new channel of speech transmission may be available toward putting the very deaf, of war causation, again on the community level on which he previously stood and moved.

The combination of speech-reading with auditory re-education of the war deaf is another form of application of this new class of training—new in the sense of the exigency which has called it forth—and which presents problems urgent for solution to both the surgeon and the teacher beyond those presented by the casualties of civil life. Re-education of hearing has become an important part of the treatment in many forms of chronic and persistent ear disease, and its association with speech-reading, under conditions which shall convey the sound of the speech to the ear, either aërially or by bone conduction, and leave the lips of the teacher visible is one of its newer forms now being studied and elaborated. In cases of serious degrees of impairment of hearing the association of the visual and auditory impressions helps also in the formulation of the individual voice.

In cases of middle-ear injury, with the labyrinthine apparatus intact, the surgical repair process, including mobilization of the middle ear sound-transmitting apparatus, may be of slow progress or even, because of conditions of disruption, only moderately effective. In such cases the coincident training in speech-reading may be a means of interest and encouragement to the convalescent and, whatever may be the ultimate degree of rehabilitation of his hearing, an addition to his equipment in again taking his place in a working and competitive world.

In those cases beyond repair, those in which the impairment of hearing is absolute, because of the severity of the war injury, and those in which the implication of the labyrinth, in consequence of continued exposure to loud noise, constitutes a permanent defect, training in speech-reading is something more than a crutch—it is a new means of progression.

Many of the war deaf, as the result of long exposure to excessive gun fire and the incident noises of campaign, will be found to hear better, even adequately for ordinary purposes, in the presence of the noise of machinery in motion, of a railway train, or the clangor of a city street, or even under the influence of the mechanical vibration of that comparatively noiseless vehicle, an automobile; but such persons are often distressingly hard of hearing in a quiet place. In such cases, to meet the mutations incident to a change of environment, a knowledge of speech-reading is a constant stay and reassurance to the patient and should be taught with a due estimation of its value in this respect. In the cases of psychic deafness the stimulation of the imitative faculty in speech-reading may be one of the keys which shall help to release the imprisoned consciousness, and when the considerable impairment of hearing, or its total loss, is not the only malady, but is associated with other crippling results of injury, other than loss of sight, the facility with which compensation can be afforded for the former disability will serve as an encouragement to effort in other respects, while even in the case of the blinded deaf, speech-reading by touch may become a medium of communication, as has been demonstrated in pupils of some of our civil institutions.

The demand for this special teaching of speech-reading to meet a vicariously created need suggests its usefulness as a part of the future curriculum of those who are to be of that body of citizens especially devoting their lives to the protection of the peaceful and righteous activities of their fellows, and the ability to translate speech by sight, as well as by hearing, would be a valuable addition to the equipment of all guardians of the public weal and should be seriously considered as a part of the necessary training in selected branches of army and navy and of other public service.—*Volta Review.*

Diphtherial Infection of Wounds.

A good illustration of the great complexity of questions bacteriologists may be called upon to answer is afforded by a recent inquiry carried out for the Canadian Army Medical Corps with respect to the presence of diphtheria and diphtheroid bacilli in open wounds. The inquiry was rendered necessary by the publication last September of a report by Majors Fitzgerald and Robertson, to the effect that out of 67 cases of open wounds in men returned from the Canadian Expeditionary Force examined in a particular division between May 20th and June 7th, 1917, no fewer than 40 afforded cultures of the diphtheria bacillus. The significance of the observation was somewhat discounted by the discovery that a nurse whose duty it was to dress the suppurating amputation cases had a slight wound of the index finger which yielded cultures of *B. diphtheriae;* she could not, however, be held entirely responsible for the outbreak because other instances of infected wounds occurred in soldiers who had returned to Canada after the nurse had been taken off duty. In two or

three cases the infection was discovered in men immediately on their arrival in Toronto from overseas. Characteristic membrane formation occurred in certain of the cases, and in some the virulence of the bacilli isolated in cultivation was proved by inoculation.

The fact that some of the cases afforded cultures of the diphtheria bacillus immediately upon arrival in Toronto made it essential to institute an inquiry in England to determine the frequency of the presence of *B. diphtheriae*, and incidentally of allied diphtheroids, in the wounds of patients in Canadian military hospitals. The inquiry was very laborious, but the ersult was reassuring. Only in four out of 306 cases examined were bacilli isolated having cultural characteristics of a true diphtheria bacillus, and of these four only two were virulent. On the other hand, in a considerable number of cases diphtheroid bacilli were isolated—that is to say, bacilli which morphologically resembled the true diphtheria bacillus.

As long ago as 1888 attention was drawn to the fact that a Gram-positive bacillus which might easily be mistaken for the true diphtheria bacillus was frequently present in the throat and mouth. This was at first assumed to be an attenuated strain of the virulent germ, but when more refined bacteriological tests were brought into use in which the power of bacilli to ferment sugars was tested, it was established that this non-virulent bacillus was quite distinct from the true virulent bacillus, and it received the name *B. hofmanni*. Later on many other bacilli resembling the true diphtheria bacillus were found, and at least six groups of them distinguished. Morphologically, and in the early stages culturally, diphtheroid bacilli from wounds are many of them indistinguishable from *B. diphtheriae*, and in some instances they may have the same power to ferment sugars, so that it is not justifiable to make a diagnosis of diphtherial infection of wounds either from smears alone or from stained preparations and cultural characteristics. The demonstration that the bacilli produce toxins—ectotoxins—which can only be effected by observing the result of inoculation of broth culture, is alone capable of proving the presence of infection by the true virulent *B. diphtheriae*. There is a certain amount of evidence that particular species of diphtheroid bacilli characterize particular hospitals, but none that the diphtherial infection of wounds is otherwise than uncommon among the wounded.—(*Brit. Med. Jour.*, June 15, 1918.)

Immediate Suture of Gunshot Wounds.

Not long ago we alluded to the immediate suture of all gunshot wounds as an unrealizable dream, but it appears that French surgeons are not willing to let the dream remain unrealizable for long. At a recent session of the Research Society of the American Red Cross in Paris Dr. Lemaitre gave a full account of a series of more than 2,500 cases admitted to his hospital since he adopted immediate suture as a routine method. Primary suture had been possible in 79 per cent. of the cases, delayed primary suture in 11 per cent., secondary suture in 5 per cent., while no surgical measures whatever were required in the remaining cases. The figures speak clearly. The points in technique on which Dr. Lemaitre lays most stress are the complete removal of foreign material from the wound, the excision of every particle of devitalized tissue resulting from the injury, and, of course, strict observance of aseptic precautions. The period of eight hours immediately following the injury is the most propitious for immediate suture, but a reasonable measure of success can be attained at a much later epoch.

Captain W. Girling Ball, R. A. M. C., deals with the time factor from recent experience at a base hospital in France. At many a casualty clearing station the surgeons in charge are now able to carry out radical excision of most wounds, followed by primary suture of the tissues after removal of the damaged portions. Owing to pressure of work this cannot always be done, nor is it always advisable to make the attempt, for to ensure the removal of all damaged tissue in wounds involving considerable areas of muscle is difficult. Although at the time there may be nothing to indicate that damaged tissue has been left behind, evidence of the fact will be apparent within a day or two. Delayed primary suture should then be the object in view. The chief bar to complete wound closure is found by Lemaitre, in agreement with Tissier and Duval, to be the presence of a hemolytic streptococcus.

At the same meeting of the Research Society of the American Red Cross Dr. Vaucher gave the results of some early bacteriological observations on gunshot wounds. For six to eight hours after their infliction the wounds were found to contain no large number of bacteria, whether examined directly or by means of culture. In later observations on the flora of wounds examined six to ten hours after suture, a drain having been left in, the discovery of streptococci necessitated the complete opening up of the wound. If aerobes other than the streptococcus were present it proved advisable to leave the drain in position for a further period of 36 to 48 hours, the wound being watched carefully from hour to hour, and especially so if anaerobes were found. The streptococcus showed itself the most potent factor in determining failure, another being the presence of a leaking blood vessel in the wound. Vaucher has shown repeatedly that provided a wound is excised with care and dressed aseptically, it may remain completely sterile for several days.

Undoubtedly French surgeons appreciated sooner than British the possibilities of primary suture in expediting convalescence and enabling men to return to the trenches within a short period of time. But our own surgeons have not been slow to follow in their steps. Colonel G. E. Gask and Captain J. T. Morrison related their own large measure of success at the same Paris Conference, the latter especially insisting on an examination of the wound flora before the performance of suture. While this is an added safeguard it can hardly be disputed that even primary suture may be safely performed without it, and where a bacteriologist is not immediately available the patient cannot fairly be robbed of the immense advantage to be derived from the method merely on this account.—(*Lancet*, June 29, 1918.)

War Wounds of the Kidney.

M. Checassu's report (*Bull. et mém, Soc. de chir. de Par.*, 1918, xliv, 81) is based on 56 kidney war wounds observed, 46 being recent and 10 being old wounds. Hematuria does not necessarily accompany a renal wound, and in 12 cases in which a renal lesion was actually verified there was hematuria in 5 only. The kidney wound was accompanied by a liver lesion 11 times, by a lung lesion 9 times, and by lesions of other viscera in 11 cases. In 21 cases the kidney lesion was isolated.

The conditions which make an isolated kidney wound dangerous are hemorrhage and infection. In 46 fresh kidney wounds severe hemorrhage was observed in 6. In 3 of these cases where there was a concomitant liver wound, the patients died. In 3 of the cases the hemorrhage was a hematuria; 2 died within a few hours. In 5 cases a perirenal hematoma was produced. Of 35 remaining patients who showed no special symptoms necessitating immediate action, a primary operation was done in 11 cases, a secondary operation in 2, and abstention was observed in 22. The primary operation consisted either in a nephrectomy or in cleansing and drainage of the trajectory. Of 3 nephrectomized cases, 2 died; of 4 tamponed patients, 3 died; 1 hematoma drained recovered; 5 clearance and drainage operations recovered; 22 abstentions from surgical intervention gave 3 deaths and 19 recoveries.

Classified according to the nature of projectile, 21 shell wounds gave 16 evacuated and 5 dead; 14 bullet wounds gave 10 evacuated and 4 dead; 28 cases with projectile retained gave 10 deaths; 18 seton wounds gave 4 deaths. The very considerable proportion of dead in the case of retained projectile is due to the persistence of hematuria and secondary hemorrhage.

A severe hematuria of itself is never an indication for nephrectomy unless abundant and persistent. The kidney is of itself perfectly able to effect hemostasis in the majority of cases and should not be removed unless the hemorrhage really threatens the patient's life. The author's experience leads him to think that tamponing never suppresses a kidney hemorrhage which will not stop spontaneously.

In cases of severe hemorrhage transfusion of citrated blood undoubtedly renders immense service.

In the case of seton wounds the author thinks the indication is generally for abstention; also in cases where there is a retained projectile, because many projectiles retained in the kidney region, not necessarily in the kidney, are well tolerated, particularly if small; because many require a large opening up for their removal; and also because treatment of the supposed infected renal wound is hazardous if a partial nephrectomy is not done and there is often the temptation to do a total nephrectomy.

Only very large projectile fragments capable of being removed without extensive opening up appears to the author to be a motive for operation. Others may be left and removed later if they give rise to complications.

The author's experience and examination of old cases of kidney wounds show it a well established fact that a large number show no stigma which can be discovered by the most precise methods of functional tests. Such a fact should indicate conservation in the treatment of kidney wounds.—(*Int. Abst. Surg.*, July, 1918.)

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Physicians Are Patriots.

The medical profession is "coming through" as this journal has repeatedly stated it would. Physicans are flocking to the recruiting offices of the Medical Corps of the Army and Navy and, from present indications, the growth of the medical staff will keep pace with that of the line. It is a satisfaction to feel that the medical profession is living up to its highest traditions. The work done by its representatives abroad and in the cantonments in this country has been unusually high grade. Indeed, the operative work of the American army surgeons in France and England has elicited the admiration of the medical staffs of the allied armies and these surgeons will return to this country and develop a new surgery which will redound to the benefit of mankind. We have great reason to be unusually proud of our profession and we are assured that it will ever hold the faith.

The Pioneer in Digitalis Therapy and the Prophet of Intravenous Medication.

Joseph H. Pratt, of Boston, reminds us (*Journal American Medical Association*, August 24, 1918) of our indebtedness to William Withering, an English physician, for his great discovery of the therapeutic virtues of digitalis. Strange to say, it took 125 years to make us realize the value of Withering's discovery—a striking instance of the difficulty that new truths have in gaining acceptance. Pratt declares that Sir James Mackenzie was the first clinician to demonstrate conclusively the correctness of Withering's instructions regarding the administration of digitalis.

It was in 1785 that Withering published his book entitled "An Account of the Foxglove and Some of Its Medical Uses." His notes covered 163 cases of cardiac dropsy, and he described the methods of collecting, preparing and administering the drug. He reported failures as well as successes. The indications he considered to be a feeble or intermitting pulse, a pale countenance, lividity of the lips, a swollen, soft and fluctuating belly, and anasarcous limbs readily pitting under pressure of the finger.

Withering reveals his confidence in the true import of his discovery when he says that "After all, in spite of opinion, prejudice or error, time will fix the real value upon this discovery, and determine whether I have imposed upon myself and others, or contributed to the benefit of science and mankind."

Mackenzie analyzed his own series of observations at the Mount Vernon Hospital in London and presented evidence of brilliant results before reading Withering's book, and found that the Birmingham practitioner had anticipated him in all essential details. He even discovered that Withering had put his observations about *auricular fibrillation* in a better paper "than all the pharmacologists and physiologists in the world have ever written." The significance of this fact is extraordinary, in view of all the so-called modern work on the heart.

What has the much glorified German school of medicine contributed to our art that outclasses this English product? Too much incense has been burned in the past at the Berlin and Vienna shrines. It is fitting in these times that we accord honor and praise to a great Englishman, and free ourselves to that extent at least from the Teutonic thralldom in medical science. Perhaps we shall yet succeed in shutting out completely the Hunnish glamor that has hung more like a pall than a benediction over our art.

Another Englishman who has not been accorded as full a measure of praise as he deserves was Henry Baker, who, in his "Microscope Made Easy," published in 1743, made the following remarkable suggestions: "I believe it will be allowed, that where one person dies from a disorder in the containing vessels, twenty miscarry by some unnatural alteration in the fluids that pass through them; and therefore, if we can find what their natural state is, the means whereby it may be preserved in such state, by what accidents it may be prejudiced, and how it may be restored, our pains will be well employed. In order to obtain this useful knowledge, it will be necessary to examine the human blood and other juices, frequently, with the microscope, in every condition, and under every distemper, as well as in a state of health; by which we shall have ocular demonstration of its different appearances in each state, and of the changes it undergoes; and by experiments of various mixtures with it, may possibly discover by what means it can be altered from one condition to another. * * * Would our learned physicians [Baker himself was not a physician], who are best able to judge of such matter, be induced to take this method into their practice, it is reasonable to believe, that in a few years the causes of diseases would be better known, and the art of healing brought to a much greater certainty, than it is at present. * * * Many distempers might perhaps be cured by an immediate admission of some medicine *into the veins*, which elude the power of all that can be taken by the mouth. For the stomach, by its heat, its action, and a mixture of its juices, works such an alteration in things before they can be admitted into the blood, that they are unable to produce the same effects as if they were received into it simply and unchanged."

Certainly Baker must be credited with extraordinary insight and prophetic powers. His book was without doubt the forerunner of our manuals of bacteriology, protozoology and microbiology, and of those on the microscope itself.

The two men whom we have cited did their work exactly in that period of European history which we associate with the crimes of Prussia against Silesia and Poland, as well as other wickedness. There is some significance in that.

Federal Drug Regulation.

United States Senator Frelinghuysen, of New Jersey, proposes a commission to collect data regarding the extent of drug habits, with a view to ultimate Federal regulation because of the failure of the Harrison act. His measure is a most excellent one, for the seriousness of the situation is evident to everybody, and drastic governmental control must supersede measures which are not staying the spread of the curse.

The quickening of the Federal authorities in this matter has been brought about by the complaints of the military commanders of the camps, who have found themselves confronted by formidable evils in the way of drug vending.

We understand that the Government is interested in the sale of caffein drinks to the soldiers, which are admitted to have done very great harm to them, lowering morale and injuring the health of the victims. They are conceded to have encouraged crime and immorality.

But is there not an inconsistency involved in this crusade against caffein drinks so long as the men are provided with coffee in the service? Why should young and vigorous men be habituated to a powerful stimulant in the service which they don't need and which is known to be pernicious, while at the same time caffein drinks are prohibited outside the camps?

It is not at all unlikely that caffein intoxication played a part in the recent race riot at one of the camps, in the course of which two negroes and one white men were killed.

Caffeinized neurotics are surly and quarrelsome. Thus the instability induced by caffein may have much the same results among bodies of men quartered together as are familiar in the case of alcohol.

The individual who in civil life is merely a grouch and a nuisance because of his peculiar susceptibility to the toxic effects of caffein becomes in the military sphere a real menace.

Progress in the Control of Venereal Disease.

The discovery that less venereal disease is acquired by young men in the army than by young men in civil life is a very significant thing. It has always been assumed that the young man surrounded by good home influences and all the other civil circumstances that contribute to good morals has possessed superior resistance to vicious attack, but this belief has been shown to be false, in so far as our own army is concerned.

The significance seems to consist in the fact that the young men in the service have received more or less instruction in sex hygiene. The home boy has received a whole lot of instruction in matters religious and moral, but none worth talking about in sex hygiene.

The boy in the army knows conditions and understands dangers, and is capable of protecting himself. The home boy is ignorant and vulnerable.

It simply remains to educate the civil population, though no doubt it will be hard to overcome in this quarter the resistance which represents a conviction that the *thorough* teaching of sex hygiene encourages vice.

Relief for the Victims of Quackery.

During a discussion before the Practitioners' Society not long ago Dr. Gibney said he had seen several cases in which harm had been done by chiropractors. One woman of advanced age with pains in the legs had been treated by suspension and pounding with the result that after each treatment she developed spasm of the hamstring muscles. When asked why she had gone back the reply was that she had been obliged to purchase tickets for twenty-five treatments on the occasion of the first visit.

Aside from its amusing feature this case throws light on how it is that irregular practitioners can collect sums running from twenty-five to fifty dollars, or even much more, in advance of treatment. It is safe to say that regular practitioners could seldom collect anything before treatment. The reason why the irregular practitioner gets his fees in advance is simply because there is an implied or direct guarantee to cure. People are willing to pay for that, when convinced that they are putting themselves in the hands of practitioners who cannot fail to cure them.

Suppose that legislation against irregular practice were to take the form of a prohibition against such methods; suppose a severe penalty, also, were to be provided for in the law; it is our belief that a few convictions would go farther toward putting a crimp in irregular practice than any form of direct legislation against the cults as cults, which is impracticable in any case.

It is the guaranteeing of a cure and the receipt of money for the offer against which we should direct our efforts. This constitutes the obtaining of a fee under manifestly false pretenses. If there were a law against the practice, which prevails among the irregular practitioners, such victims as the one cited by Dr. Gibney would have a remedy and the fakers would have to go to work, for they would not be able to compete honestly with regular physicians.

The irregular practitioners do not prosper because their therapeutic methods are successful, but because of the advantage that they take of sick people.

Why not put an end to the taking of this advantage? It is now unethical to guarantee a cure; why not make it unlawful as well by the enactment of special legislation? The taking of money in advance of treatment should constitute *prima facie* evidence of fraudulent intent. If it were accepted after unsuccessful treatment the failure to cure should then constitute proof of fraud, assuming the previous guarantee. Restitution of the fee should be included in the penalty.

Prosecutions at present seem to be directed chiefly against the very lowest order of quacks on the basis of fake diagnoses and mystical therapy. This is good work but we should extend our operations and meet resourcefully the problem presented by the crooks of higher class.

Pyloric Stenosis.

A. J. Scott, Jr., Los Angeels, after erferring to the rarity of cases on record after the second or third month after birth, reports a case of a boy, aged 22½ months, who had been more or less ailing for some time. The author thought he was dealing with a pylorospasm. The operation (pyloroplasty) did not confirm this, but revealed a pyloric stenosis of the typical form. The operation was not successful in saving the child's life, though Scott thinks that if the operation had been done sooner, before the exhaustion had taken place, they might have saved the child.—(*J. A. M. A.*)

Clinical methods as well as roentgen methods are necessary to differentiate between symptom producing and non-symptom producing tuberculous lesions.—Hubeny.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

On the So-Called Unfit.

The exceptionally fit, says Groszmann, provide our leaders and builders, our banner-bearers and thought-heroes, our saviors and our martyrs—as well as our destroyers, cranks, perverts, and felons, the Mephistopheles and the Tartuffes, for these individuals of one-sided development may easily slip from one class to another at any given moment of tension.

That pronouncement is true, for the exceptionally fit person is almost certain to be a narrow specialist. Few can hope to approach a Leonardo Da Vinci.

One of the most interesting phenomena of the day is the attempt of the so-called unfit to slip into the exceptionally fit class. Sometimes they succeed in being accepted as fit, and sometimes they really do acquit themselves well. The latter statement sounds paradoxical, for how, the reader will ask, can the unfit prove themselves fit? The answer, of course, is that fortuitous circumstances have actually permitted them effectively to utilize latent and unsuspected powers.

In view of these curious happenings we might just as well assume for all practical purposes that there are no absolutely unfit human beings—barring gross defectives. Even your feeble-minded subjects frequently develop a high degree of skill through manual training, in which they are apt to be adept. The Borgia who was that monster known to history as Alexander VI. was a skilful poisoner, which implies fitness of a reprehensible kind, but none the less fitness on that account.

The feeble-minded who have developed unusual manual skill fit in somewhere after all, and the Borgia type is a skilful specialist, however much we may execrate his practices, but what shall be said of those self-possessed individuals who, although thoroughly incompetent, step forward promptly when leaders and managers and promoters are required and take charge with an air of utter fitness. They are apt to talk well and forcefully, and to be well endowed with respect to "personality." While they could not successfully conduct an established peanut-stand business, they would never hesitate to direct the affairs of the nation should the opportunity by some strange chance be opened to them.

We have in mind an individual who has never, throughout his forty years of life, given any evidence that he senses in the slightest anything pertaining to orderliness, and who has nearly always lived the parasitic life at the expense of his relatives, yet who at this moment is instructing business men in what he calls System, a scheme designed to improve the work of their office forces and effect economies.

Many of the incompetent people who have endeavored to take a leading part in organizing and directing war work in this country, and who have had to be sternly dealt with by the criminal authorities, have simply been our self-possessed friends, very long on personality and alarmingly short on ability.

Mrs. Anna S. Richardson has reported (*Evening Sun*, August 28) the presence in France of meddlesome "workers" who simply hamper the General Staff and, in their smart uniforms, crowd patient French folk away from their favorite places. These incompetents fairly swarm in Bordeaux, Paris, Tours and Toul. For every trained, efficient relief worker in France to-day there are two or more who are there only by grace of their "front."

Visitors of the sort just described, says the *Sun* of August 29 editorially, fasten themselves on our expeditionary forces and burn up gasoline, eat food and occupy space sorely needed by men and women with important business to transact. The British and the French Governments have suppressed persons of similar character among their own peoples. The *Sun* suggests that the passport regulations be tightened up and a plan devised by which nobody shall be allowed to go to Europe unless it be affirmatively shown that his going will be to the benefit of the United States and its aims in the war.

But even of these people we may ask, whimsically at least: are they not adepts in self-possession?

Caduceus.

The caduceus is the symbol of the Medical Department of the United States Army.

Saver of souls am I,
Caduceus;
In the files that pass you by,
In the mud where soldiers lie,
In the fight where strong men die,
I'm there to help.

Doer of tasks, or right,
Caduceus;
When the world about is night,
When the day with dawn is light,
When the sky with sun is bright,
I never cease.

Valor and love, my creed,
Caduceus;
Mid contagion show no heed,
Mid the legion dare to bleed,
Mid the flame and cannon lead,
A life to save.

Witness the sign of me,
Caduceus;
On a staff twin serpents be,
On the staff two wings you see,
On my sign rests victory,
O'er Hunnish death.

—OVID C. LANE in N. Y. *Sun*.

Correspondence

Kensington, Conn., Sept. 9, 1918.

To the Editor of THE MEDICAL TIMES:

In the September issue of the TIMES is this little editorial:

WHY ANTISEPTICS?

R. Tanner Hewlett, of London, thinks that in the treatment of war wounds good surgery is the essential for success. By this he means thorough cleansing and complete removal of all foreign bodies and material, and free drainage. In a recent paper in *American Medicine* he doubts whether hypochlorite solutions are better than some other antiseptics and suggests trial of these by the Carrel-Dakin method, the results to be compared with those from Dakin's solution.

Why not physiological salt solution?

Our chief interest lies in the interrogation, "Why not physiological salt solution?"

Why we are interested may be understood when I state that a large part of our work is minor surgery, mostly railroad and shop, and a very large per cent of these cases are of the extremities, with such laceration.

Up to three years ago we used bichloride and carbolic acid,

and our results were as good as the average, no better and no worse. Since that time we use normal salt solution for all our surgical work and our results are so much above the average that we are never tempted to return to the old methods. Infections are so rare that we never expect them, the tissues heal much more rapidly, granulation is actively stimulated, and the patient is much more comfortable.

We would only amplify your interrogation somewhat by asking, "Why do we use Carrel-Dakin or any other compound antiseptic when we have always at hand an equally good or better antiseptic in the physiological salt solution?"

R. M. GRISWOLD, M. D.

Public Health

Plumbing and Drainage of Buildings.

The committee on plumbing and drainage of buildings of the American Public Health Association, at the last meeting, promulgated these rules which may be modified at the 1918 meeting:

1. The health of a community demands the prompt removal of all houeshold wastes.
2. This can be accomplished only with a copious supply of water and through properly designed drainage systems.
3. The drainage system must be so designed that sewer air does not find its way into the building, for although no specific disease would result therefrom, the vitality of the occupants might be lowered.
4. This necessitates the adoption of a plumbing code that should be drawn up by or approved by health officials.
5. The enforcement of the provisions of the code requires competent inspection of the work.
6. The duties of a plumbing inspector, superintendent of sewers and sanitary police, are so closely related that a versatile official can usually be employed to fulfill the duties of the three positions in the smaller municipalities.
7. The abatement of nuisances connected with defects in existing plumbing is simplified by having a personnel of trained plumbing inspectors.
8. The chief concern of a health department in regard to plumbing is to have it so installed that no menace to health and no nuisance will result.
9. No menace to health and no nuisance will result if the pipes are adequate in size and arranged so as not to cause obstruction, if there is a plentiful supply of water with which to flush fixtures, if the installation is of such substantial construction that sewer air cannot enter the building, If there is no possibility of contamination of the drinking water supply, and if the material of all fixtures is non-absorbent.

If these facts are admitted, the general fundamental principles of plumbing design should be as follows:

1. The system should be as simple as possible.
2. All unnecessary pipes should be omitted, to save expense to the owner, and to reduce the number of joints that may become defective.
3. Every fixture trap should be protected from syphoning and back pressure, and a circulation of air assured.
4. Only extra heavy grades of adopted metal pipe, fittings and traps should be permitted within the building. A system of piping that will not corrode easily, nor be affected by sudden changes in temperature, with the joints equally as strong as the pipe itself, should be installed. Frost should be guarded against in locating pipes and fixtures.
5. The size of waste pipes should be ample for the fixtures which they are to serve, but not so large that the scouring effect of the flush will be lost.
6. All main waste pipes should be extended through the roof to a point at least two feet above all windows that are within twenty feet of such pipes.
7. Water supply pipes and flush tanks must be of such a size that an ample flush can be obtained for each fixture and cross connections with dual supplies must be avoided.
8. All water closets should be placed in compartments that have ample external light and ventilation.
9. Water closet fixtures should be connected with the soil pipe by a joint that will remain permanently air tight.
10. The running trap and fresh air inlet need not be required except in special cases, such as where houses are terraced, one above the other, in cases where main sewers are exceptionally foul, or where the majority of houses in a built up section are already provided with such traps. The trap retards the flow, retains solids and often becomes entirely blocked, thus creating a nuisance. Sewer air is no worse than house drain air, and if the plumbing system guards against one, there is no danger from the other.
11. All pipes must be run in as direct a manner as possible, and no changes in direction should be made with less than 45° fittings, except in vertical lines where TY's may be used. A sufficient number of cleanouts must be provided to permit the removal of any possible obstruction.
12. The water test must be applied to all work before it is concealed or enclosed, and the pressure smoke test must be applied to all work when the building is completed and ready for occupancy. The peppermint test is unsatisfactory.

The Sanitation of Swimming Pools.

C. E. Smith, Jr., and H. M. Schoberg of St. Paul believe that pools should be built with a smooth lining, offering as little obstruction to the flow of water as possible. Four sides of the pool should be available for use in every instance. A drip basin should be situated about twelve inches below the main platform to catch the drip from bathers standing before diving. Life rails should be about four sides. An overflow gutter should also be arranged the same. Splendid combination drip basin, life rail, overflow gutters are frequently seen. Where possible pools should be at the top of the building in which they are contained. The problem of lighting is thereby easily solved (and it is imperative that a submerged person should be always easily seen for perfectly obvious reasons), further, the water from the pool can be readily used when the pool is on the upper floors, for flushing closets, urinals, etc., throughout the rest of the building, the water of dilution replacing that withdrawn for the purposes mentioned. The saving of the cost of water by this location of the pool should more than offset the added cost of stronger construction and extra plumbing.

Where a drip basin is installed the pool platform may slope toward the pool for drainage, otherwise it should slope away.

Strict attention should be given the cleansing of the pool when it is emptied. It should be thoroughly scrubbed, scraped and then flushed. Careful steaming of the walls and finally, airing and drying would help materially in reducing the bacterial content of the next filling. Where wreaths of sediment collect on the floor of the pool during use, various ways have been devised for its removal. Pumps on the general plan of a vacuum cleaner are recommended. Where refiltration is practiced the water being constantly in motion should prevent the formation of these wreaths.

The same attention should be given to the water for filling purposes as is given to drinking water. The purest water obtainable should be chosen rather than the most accessible.

Constant *refiltration* makes it possible to use a given filling a greater length of time. This is an important item in cost of maintenance and will more than compensate for the initial cost of the equipment. The tendency toward installing a plant of too small capacity should be avoided. It should be possible to refilter all the water in the tank in one day (eight-hour days are vogue). Usual frequent attention should be given to reversal of filters, washing and steaming. *Dilution* should be practiced sufficient to make up the loss by splashing, etc. No definite amount can be stated. This should depend on the number of bathers, frequency of refilling, etc. As a rough working rule it is suggested that the dilution be sufficient to amount to one filling between refillings. *Refillings* should be determined by the number of bathers, size of pool and bacterial content, as there is no direct relationship between the number of weekly refillings and the sanitary condition of water. The general appearance of the water counts for nothing.

Chemical disinfection is imperative. Both calcium hypochlorite and copper sulphate have advantages—the latter probably being the favorite. Either should be used in strengths increasing from .5 part to the million of water depending on the size of the pool, number of bathers, the hardness of the water and the bacterial reduction obtained. Bleach must be tested frequently for available chlorine. It quickly disappears from the pool.

Full shower bath with soap should be demanded of all bathers. To make this possible the shower apparatus must be inspected very frequently. Instruction should be given bathers in the purpose of the bath. Especial attention should be given the peroneal region. When water strikes a person's body, the natural tendency is to urinate. This should occur in the shower, not in the pool. The floor should be taken care of to prevent tracking the dirt, bacteria, etc., which have been washed off by the shower, onto the deck about the pool. On the pool platform inspection of every entrant should be performed. Bathers should wear no clothes. If this be impracticable the authorities of the pool should furnish the suits—one-piece, undyed, scanty—and see that they are properly sterilized and dried between usings.

If necessary every pool—charging a fee for entrance or free—should be licensed by the local health officer. Inspection and bacteriological examinations should be frequent, and failure to come up to a certain standard should be cause for revoking a license. In this the method of control would somewhat resemble that of milk. If the use of swimming pools be made compulsory the authorities who so make them should be held strictly accountable for the sanitary conditions in the pools and the spread of disease through them.—(*Am. Jour. Pub. Health*, June, 1918.)

Prepared Meat Foods and Disease.

Dr. W. G. Savage discusses the question of disease in relation to prepared meat foods. This term generally includes such foods as brawn sausages, saveloys, polonies, meat pies, salted meats and canned meats. Food may be infected either because the animal was diseased, or because the pathogenic organisms have gained entrance during the preparation or handling. To avoid the former possibility the internal organs of the animal, such as the liver and kidney, should not be used in the preparation of the food. Diseased meat should also be avoided. The food should always be thoroughly boiled or cooked before consumption, although even this process will not remove the danger from poisoning due to the presence of toxins from the Gaertner group of bacilli. Sausage skins should be sterilized before being used and should not be used freshly prepared. Preservative when added in small amounts to meat foods are injurious because they inhibit the development of putrefactive bacteria without affecting the Gaertner group of bacilli at all. The slaughter house should be kept separated from the food preparation room, and every precaution of cleanliness and decency should be practiced. The food handlers should be examined in order to exclude the possibility of disease carriers.—(*Pub. Health*, England, No. 4, 1918.)

"Adequate Ventilation" Defined.

A resolution adopted by the Health Department of New York City states that in the interpretation of the Sanitary Code the term "Adequate Ventilation" will be as follows: (1) The temperature of rooms during periods of occupancy should register preferably from 60° to 70° F. at all times, except when the outside temperature exceeds 60°. This does not apply to rooms used for special purposes, such as industrial places where high or low temperatures are essential and unavoidable. (2) The relative humidity in occupied rooms should not exceed 70 per cent, except when the outside (wet) bulb temperature exceeds 59°. (3) The carbon dioxide in occupied rooms of all classes should not at any time exceed 10 parts in 10,000 volumes of air in any part of the occupied spaces of the rooms. (4) The dust particles in the air of occupied rooms in all classes of buildings should not exceed 1,000,000 per cubic foot. (5) The bacterial content should not exceed 100 per cubic foot. (6) The air of occupied rooms should be free from objectionable odors.

Sickness Surveys.

The Metropolitan Life Insurance Company has issued a report on the *Sickness Survey of Principal Cities in Pennsylvania and West Virginia*, which is the sixth community sickness survey. The health status of 374,001 persons was obtained by the company's agents who found 7,333 cases, making the sickness rate 19.6 per 1,000.

Sickness was responsible for the loss of at least 2 per cent of the effective working time of the wage earners. This causes not only loss of wages but frequently is a source of misery and destitution. Of the 7,333 persons reported ill, 6,908 or 94.2 per cent were unable to work, and 5,384 or 73.4 per cent had a physician in attendance, 25 per cent of the sick were in bed at home, 8.2 per cent were in hospitals, and 61 per cent were ambulant cases, unable to work. Those sick, yet able to work constituted 5.8 per cent.

Accidents and injuries were the chief cause of sickness in this survey, amounting to 602 cases or 11.2 per cent. Then came "rheumatism" which amounted to 433 cases or 8.0 per cent. "Rheumatism" probably refers to such diseases as neuritis, tuberculosis, gonorrheal and post-traumatic diseases of the joints, bones, and muscular system and function neuroses. Influenza caused 392 cases of sickness; pneumonia, 307 cases; diseases of the stomach, 183 cases; functional disorders of the nervous system, 181 cases; tuberculosis of the lungs, 180 cases; colds, coryza and rhinitis, 166 cases; bronchitis, 156 cases; normal childbirth, 125 cases. There were other causes of sickness such as asthma, diseases of the heart, tonsillitis, appendicitis, cerebral hemorrhage, apoplexy and paralysis.—(*Am. Jour. Pub. Health.*)

Surgery

Minor, But Nevertheless Major, Points in Connection With Anesthesia.

For many years the writer of this article has been fully aware of the fact that the side effects of drugs used for the production of surgical anesthesia were not sufficiently studied and recognized, and adequate measures were not taken to avoid disagreeable or dangerous after effects. Thirty years ago he carried out a series of observations upon patients who received ether as an anesthetic and found that invariably its administration resulted in a loss of body heat with the consequent fall of temperature, which, in some instances, was sufficiently great to be distinctly dangerous in itself. At about the same time Barker, a London surgeon, made similar observations in University College Hospital. Since then a very large number of papers have appeared, and furthermore the relationship between shock and the action of the anesthetic has been fairly thoroughly studied.

Without doubt the most important point which has developed in the use of general anesthetics has been the recognition that these drugs should be so used that the patient suffers no pain, and yet is so little submerged below the surface of consciousness that only a few minutes suffice on the withdrawal of the anesthetic to bring into play some of the factors which are obliterated when the patient is completely anesthetized. The consequence is the patient who seems in jeopardy can be called back within a comparatively brief time, a long period of anxiety is saved to the operator, and the patient does not have to be harshly treated in the effort to revive him.

We believe that measures taken to conserve body heat during the administration of an anesthetic are still often lacking. At times the patient is well wrapped in blankets, but if the operation is to be performed upon the middle zone of the body, these blankets are rolled up, or down, and not infrequently hang heavily across the thorax, or even across the neck of the patient, who is unable to resist their pressure voluntarily during the relaxation induced by the anesthetic, while, at the same time, that portion of the body which is most susceptible to cold, namely, the abdominal viscera, is exposed to an atmosphere thirty degrees below internal body temperature. Such exposure can be largely avoided by covering as much tissue as possible, leaving only the zone to be operated on exposed to the eye and air. Conversely care should be taken that nurses, stimulated to activity in regard to the maintenance of heat, although they may be warned against producing burns by external applications, may, nevertheless, greatly oppress the patient by the too free use of hot-water bags and induce a condition closely allied to heat stroke.

An interesting paper dealing with these minor, yet major, points in connection with anesthesia was read not long since before the Los Angeles County Medical Society by Miss Florence Henderson, who reported upon an experience in twenty-two thousand cases of surgical anesthesia. We note with interest in the Mayo Clinic, where we understand she has had her large experience, they have come to the conclusion that the simpler the anesthetic the better, consequently they do not employ any of the various combinations of gas-oxygen, gas-oxygen-ether, or chloroform-ether, but use ether by the drop method, which every one has found is advantageous. The credit for the introduction of this plan belongs to Dr. Oscar H. Allis of Philadelphia, who, by his introduction of the Allis inhaler at the Jefferson Hospital many years ago, proved that the old saturation method produced many difficulties which the drop method avoids. A little more ether may be used, but a great deal less anxiety is suffered by the surgeon and less discomfort by the patient. The drop method, so-called, may, however, through a misunderstanding in technique, not be the drop method at all. It does not suffice simply that the ether shall drip drop by drop, but that each drop shall be taken up from the inhaler by the patient as it is dripped, drop by drop. Dropping ether rapidly upon many layers of gauze, so far as the patient is concerned, is equivalent to pouring it on the gauze in the old way and soaking the patient with it, and, as Miss Henderson well says, there should always be sufficient air with the ether to keep the color pink.

Again, we note with much pleasure her comments upon a point to which we have constantly referred in these pages in past years, namely, the error of hurrying the production of anesthesia. Not infrequently when there are many cases to be operated upon in a general hospital the anesthetist feels pushed by his chief to have a patient ready at a given moment. This is emphatically illustrative of the old adage, "the more haste the less speed," since pushing the anesthetic, while it may hurry the patient into the operating room, is apt to cause

so many disagreeable symptoms as in the end to produce definite delay and real loss of time. This is particularly important if the patient is either feeble or toxic, and an excess of ether increases the amount of mucus which is secreted in the upper air passages and so makes another complication. In operating upon the intestines or upon the gall-bladder it should be remembered that not infrequently the manipulation of these parts results in the regurgitation of some of the intestinal contents into the stomach, which, in turn, may be regurgitated into the mouth, and if the anesthetist is not on the watch and the patient is very deeply anesthetized, the latter may be drowned in this fluid or suffer from a septic pneumonia later on.

Again, we note with much interest that the experience of the writer whom we quote is to the effect that an anesthetic, such as ether, if properly given, is less dangerous to a patient than the performance of the operation without an anesthetic; and, again, along this line, she states that unless the heart is badly damaged and dilated ether can usually be safely employed in operations upon the thyroid. In these cases one-sixth of a grain of morphine and one-one-hundred-and-fiftieth of a grain of atropin given thirty minutes before the operation allays nervousness, prevents undue secretion of mucus, and permits the administration of ether with plenty of air, provided it is not pushed.

Perhaps one of the most remarkable statements made is that in certain badly afflicted pulmonary cases (*sic*) ether is not only tolerated but appears to have quite a specific beneficial effect, and Mikulicz is quoted as having stated that he had seen more pneumonia follow local than general anesthesia.

Additional points of interest are the necessity of seeing to it that the patient after the operation is not put back to bed in a gown which is wet with perspiration, which is often profuse when ether is freely given.

Last of all, we are glad to see that the writer notes the importance of the personal and human element in the administration of an anesthetic. The anesthetist should gain the confidence of the patient before beginning the administration of the drug, and should do everything in his power to lead her to believe that the ordeal is not as severe as she fears. A cheerful demeanor and mental comfort does much toward making the period of anesthesia quiet and devoid of evil after effects. Too often the surgeon, with his mind centered upon the difficulties and gravities of the operation, and being accustomed to seeing many people under an anesthetic, ignores the psychic side of the problem before him, and while the area of operation may be successfully treated, the mind and nervous system of the patient may suffer to a degree which requires many more weeks for convalescence than it takes for the wound to heal.—(H. A. Hare, *Ther. Gaz.*, May, 1918.)

Paravertebral Anesthesia.

In a comprehensive paper on carcinoma of the pregnant uterus under paravertebral anesthesia, Mason & Konrad of Boston give a good description of the technic.

In paravertebral anesthesia, as the name implies, the anesthetic is placed outside of the spinal canal about the vertebrae, and in close proximity to the nerve trunks as they emerge from the spinal canal through the intervertebral foramina. The field of operation is anesthetized segmentally by blocking each segment separately. This is done along the back by using the ribs in the dorsal and the transverse processes in the cervical and lumbar regions as guides. A needle of appropriate length is introduced vertically over the bony landmark and pushed forward till it meets its resistance. From this fixed and easily located point it is not difficult to find the nerve as it emerges from the spinal canal to pass underneath the inner border of the rib or transverse process. There may be variations in the bony landmarks but the nerves always follow these, so that, guided by them, the needle point can always be brought into close proximity to the nerve, and as this is an infiltration anesthesia, proximity is all that is desired. For instance, in the dorsal region the needle is introduced on a level with the spinous process about four centimeters from the median line and pushed vertically inward until the point strikes the rib; thus the rib belonging to the process next above is located. Now withdrawing the needle nearly to the skin, the angle is changed so as to let it pass just underneath the rib and the needle pushed one-half to three-quarters of a centimeter deeper. The point of the needle now lies in the intercostal space into which 15 cubic centimeters of a one-half per cent solution of novocain with 1:1000 adrenalin is injected. This is repeated on both sides until the desired field is anesthetized.

For the sacral segments a slightly different scheme is followed. Here the nerves do not pass backward but come forward and spread out over the anterior or inner surface of the sacrum. To reach them a needle 15 centimeters long is pushed through the perineum at a point on a level with the tip of the coccyx and 1.5 to 2 centimeters from the median line. The needle is pushed forward parallel to the horizontal and sagittal planes of the body. Thus it invariably meets a resistance at or near the second sacral foramen in the hollow of the sacrum at a distance of about 8 centimeters from the tip of the coccyx. By raising the angle of the needle with each introduction the third, fourth, and fifth segments may be successively located. The injections are made while gradually withdrawing the needle so as to inject in a line over the sacral nerves and infiltrating this entire area.

The first sacral foramen is located by depressing the needle about ten degrees from the horizontal and pushing it forward until it meets a resistance; it should pass about 1.5 to 2 centimeters deeper than for the second foramen.

Because the sacral nerves spread out over the inner surface of the sacrum a larger quantity per segment is injected here than in the dorsal or lumbar regions; namely, 20 cubic centimeters per segment or 200 cubic centimeters for a complete anesthesia of all the sacral segments.

Preceding the anesthesia patients are given 10 grains of veronal on the night before operation; one two-hundredth of a grain of scopolamin and one-half of a grain of narcophin two and one-quarter and one and one-half hours, respectively, before operation. In patients that are cachectic or weigh under one hundred pounds three-fourths of this dose is given. If necessary to keep the patient absolutely unconscious, one-half of the above dose may be repeated at no less than one and one-half hour intervals. This preliminary seminarcosis is necessary to eliminate the psychic shock and phlegmatic patients will need less of this, particularly if the anesthesia is perfect. In fact, if she so desires, a patient may remain fully conscious during the operation; the injections are less painful than it would seem.

The only general reaction that the author has observed outside of the anesthesia is a slight temporary pallor due to the adrenalin, and a temporary rise of the pulse which they attribute to the amount of fluid injected. The blood pressure is not noticeably affected.

The anesthesia continues from 2 to 4 hours and then fades out gradually. Occasionally lip and throat dryness from the scopolamin becomes annoying but this can be counteracted by sips of water, even during the operation, for patients rarely vomit, and if so, from other causes than the anesthesia. Shock is practically eliminated by this combination.—(*S. G. & O.*, July, 1918.)

Acute Intestinal Obstruction by Tapeworms (T. Saginata).

J. B. Christopherson and Mustafa Izzedin of Khartoum suggest that the occurrence of intestinal worms causing acute obstruction is so infrequent in those countries where surgical textbooks are compiled, that authors as a rule do not even mention them as a possible cause. Nevertheless intestinal parasites are a very real source of danger in tropical countries, and they should be borne in mind as a possibility when exploratory operations are undertaken for acute intestinal obstruction.

Perret and Simon summarize the histories of eleven cases of intestinal obstruction all due to *Ascaris lumbricoides*, all recorded since 1887. Most of these cases were diagnosed at the necropsy or during operation. De Mello and Masters have each recorded one case of intestinal obstruction due to *Ascaris lumbricoides;* in none of the three last was laparotomy resorted to.

No doubt *Ascaris lumbricoides* is the principal offender amongst intestinal worms, but the following case proves that laparotomy may have to be done for acute intestinal obstruction due to tapeworms (*Taenia saginata.*)

O. H., male, Sudanese, aged 40, working as a gardener in the Palace Gardens at Khartoum, was admitted into Khartoum Civil Hospital with a very much distended belly and total suppression of feces and flatus for sixteen hours. The attack seemed to come on suddenly but without pain at 5 p. m. He vomited twice during the night and the belly became more and more distended.

On admission to hospital the following morning the belly was much distended and tense, and the coils of intestines were very evident; peristalsis was plainly seen, and considerable discomfort was experienced owing to the distension, but there was no obvious pain; the pulse was 84, full and regular. He could pass neither feces nor flatus; rectal examination revealed only an empty rectum. Two or three enemata were given without effect. Vomiting of intestinal contents occurred twice after admission, and exploratory operation was decided on.

OPERATION.

Chloroform was given, and a median incision from the xiphoid cartilage to the symphysis pubis was made. The small intestines were explored from duodenum to ileo-cecal valve; they were very much distended. The large intestines were collapsed from the cecum onwards. No cause for the obstruction being found, it was thought to be a "kink" or some equally unsatisfactory thing.

The small intestines were taken from above downwards and passed through the gloved hands, segment by segment, to squeeze onwards the flatus. This was not satisfactory and the imprisoned air was evacuated by puncturing the bowel wall in at least six places with a medium sized trocar and allowing the air to escape. When the small intestines were thus relieved and collapsed they were replaced inside the peritoneal cavity—the whole of the distended small intestines (ileum) having been lying in a towel outside the abdomen while the abdominal cavity was searched—the wound was sewn up in one of the usual ways and the patient sent back to bed with the distension altogether relieved.

AFTER-HISTORY.

No flatus or feces were passed on the day of the operation, and next morning the abdomen was a little distended again, but during the morning flatus was passed and he felt more comfortable; two enemata (turpentine) were given.

On the third day after the operation a long tube was passed by the rectum and a dose of 1½ oz. of castor oil administered by the mouth; a large mass of tapeworms was passed. The patient passed bits of tapeworms on several occasions during the next three days.

Owing to a little leakage from one of the trocar punctures in a coil situated in the pelvis an abscess formed. This was localized, however, and although it became infected with *B. coli* and was very foul, recovery was retarded not more than two or three weeks.

Undoubtedly the mass of tapeworms (there were probably four or five separate ones), which measured when freed from intestinal débris two or three pints, had become blocked against the ileo-cecal valve, causing mechanical obstruction; and if this had not been relieved by manipulation of the intestines and evacuating the flatus, the patient would probably have died.

The principal points about the case appear to be the following: Absence of pain even at onset, or afterwards, although the obstruction was acute. There was discomfort certainly due to over-distension. There was very little, if any, collapse. The pulse was fairly good and, sixteen hours after symptoms commenced, was only 84. There was, however, fairly frequent vomiting of intestinal contents (in the cases recorded of obstruction due to *Ascaris lumbricoides* the worm was frequently vomited), but absence of acute pain and very little collapse, together with acute obstruction symptoms, may be taken, we think, as a characteristic of obstruction due to intestinal parasites.

In the case here described there was no question of delaying the operation, such a course was contraindicated by the vomiting, distension and peristalsis and total suppression of flatus and feces. The obstruction was complete.

The diagnosis of the cause of intestinal obstruction is such an important subject that we do not think any apology is necessary for recording this case. Operations for intestinal obstruction are among the most fatal in surgery. Statistics place the mortality at 60 to 70 per cent, doubtless due to the fact that most cases are operated on when too late; but it is also due to the fact that diagnosis remains so often uncertain until after the abdomen has been opened, and to the fact that, even if a correct diagnosis is established before the abdominal incision is made, the condition of the parts involved is a matter of speculation, and is usually worse than is apparent from the symptom.—(*Brit. Med. Jour.*, June 22, 1918.)

Amebic Abscess of the Liver and Brain With No Previous History of Dysentery.

T. D. M. Stout and D. E. Fenwick of New Zealand report a case, the chief points of interest in which are the the absence of a history of any previous illness of a dysenteric nature and the difficulty of ascertaining the occasion of the primary infection. In the *Press Médicale* of August 6 Fuchs and Bouchet quote four similar cases of amebic liver abscess, in none of which was there any history of a previous attack of dysentery or even or diarrhea. These cases all occurred in one limited area and were considered by the authors of the article to be due to infection from a carrier.

Corporal W. B., aged 35, was admitted on July 11, 1917, from France, diagnosed "gallstones," with notes to the effect that he had had, since admission to hospital in France, an evening rise of temperature to 103° F. with frequent rigors, jaundice, and pain in the region of the gall-bladder. The following information was gathered as regards the patient's history.

He had arrived in England towards the end of February, 1917, having during the voyage from New Zealand spent a few days ashore. He had never previously been out of New Zealand. While in camp in England, in April, he had an attack of what he thought was influenza, with pain in his right side, "just under the ribs," and in his right shoulder. He thought he had one or two shivering attacks at this time. He recovered and was sent to France, apparently well, on May 27th. From the time he reached France to the date he was admitted to hospital, June 15th, he had several attacks of shivering at night, and these rigors continued with greater frequency after he was admitted to hospital. He stated that he had never had an attack of dysentery, had never suffered with diarrhea. and had never noticed anything abnormal with his motions.

In this hospital the patient had a nightly rise of temperature to 102°-103°, with rigors at intervals of two or three days. He complained of pain on the right side on taking a deep breath and of a constant sense of fullness and discomfort on the right side. He was sallow but not definitely jaundiced. On palpation there was marked tenderness in the region of the gall-bladder, and there was also tenderness in the right infra-axillary region. There was slight bulging of the lower ribs on the right side, and in this region there was some oedema of the skin, noted by the difficulty in pinching up the skin as compared with the same area on the opposite side. There was an extension upwards of the liver dullness on the right side, in front, in the axilla, and behind. Breath sounds at the right base were faint, there was diminished vocal resonance, and tactile fremitus was absent. A few crepitations could be heard at both bases. Urine normal. Feces negative to bacteriological examination. Blood, three days' culture, negative. Blood count showed a leucocytosis of 18,000. No eosinophilia. X-ray examination: Diaphragm was higher on right side but moved freely with respiration; liver shadow showed indefinite increase of density on right side. The condition was diagnosed as one of hepatic abscess of uncertain nature, and the patient was operated upon.

The abdomen was opened, the liver found to be enlarged, with some weak recent adhesions over the upper part of the right lobe, and in this region the liver felt softer and less resistant than elsewhere. A needle was then inserted between the ninth and tenth ribs in the mid-axillary line towards the portion of the liver where the adhesions were felt, the hand guiding from inside the abdomen. Thick pus was drawn off almost immediately on the needle penetrating the liver. The abdominal incision was then sewn up, and an incision made over the ninth rib in the axillary line. Three inches of rib were removed, the two layers of pleura sewn together over an area of about 2x1 inches, and the incision carried through the layers in the enclosed area, through the diaphragm, and through about ¾ inch of liver substance into the abscess. The abscess filled the greater part of the right lobe, and was about 4 inches in depth, 5 inches from side to side, and 4 inches from above downwards. The contents of the abscess consisted of thick pus, partly brownish red, but mostly light yellow in color. There were no cysts in, or lining membrane to, the cavity. The pus was evacuated and a large tube inserted for drainage.

Pus obtained at the time of operation was examined bacteriologically with a negative result. Cultures were sterile. A specimen of pus from the discharge three days later was found to contain motile *Entameba histolytica*. The entameba or cysts have been found in every subsequent examination. There has been no bacterial growth from the pus.

The operation gave immediate relief from the pain and discomfort previously present, but apart from the local improvement and the disappearance of the rigors there has not been a marked change in the patient's condition. The discharge became scanty and the cavity shrank to about the size of a golf ball. The liver dullness became less than normal.

Emetin hydrochloride was given hypodermically, 1 gr. per diem, for 14 days with no apparent influence either on the temperature or on the presence of the entamebae.

The patient died on September 22nd. For a fortnight prior to his death he had a temperature of 101° with few remissions and had no rigors. He had steadily become weaker and very dull mentally till during the last few days he became almost semi-comatose, with some incontinence of urine and feces. Otherwise there were no special symptoms observed.

Post-mortem.—The abscess in the liver had shrunk markedly and was no larger than a golf ball, and around the abscess were some scarring and macrospocic degenerative changes. The

condition was obviously rapidly recovering. There were adhesions of liver to peritoneum around the sinus and adhesions of pleura at site of suture. There was no abnormality of intestines, except some slight congestion of the mucous membrane of the cecum. Some hypostatic pneumonic condition was seen at base of both lungs, especially the right. In the brain an abscess of size of pigeon's egg was present in lower inner portion of right frontal lobe extending into right ventricle and containing thin yellow pus. There was an area of softening in the brain around the localized basal meningitis in that area. The pus contained motile *Entameba histolytica*. Death was obviously due to the secondary abscess in the brain.—(*Lancet*, June, 1918.)

The Prevention and Treatment of Hemorrhage In Tonsil Operations.

Irwin Moore of London says the occurrence of serious hemorrhage may be avoided in many cases by keeping in mind the predisposing and exciting causes, as well as by careful examining each patient before operation.

It may be advisable to postpone the operation in certain cases in which hemorrhage is more likely to occur, *e. g.*:—

Acute inflammation of the tonsils when they are engorged with blood, and hemorrhage, therefore, more likely to accur; hence, in such cases, it is always advisable to defer the operation for three weeks at least until the inflammatory stage is passed.

A lookout should be kept for pernicious anemia and acute leukemia, since well-marked signs of these diseases may not be present. A typical case was shown by C. W. M. Hope at the Laryngological Section, Royal Society of Medicine, in 1914. The patient was suffering from lymphatic leukemia; the tonsils were enlarged, and covered with irregular dark nevoid patches. A case has been reported of a child aged eleven years, suffering from leukemia of a lymphatic form, where tonsils and adenoids were removed. An hour afterwards the child began to lose a considerable amount of blood, which apparently came from the post-nasal space. A post-nasal tampon was inserted, but during the night a fresh hemorrhage occurred, followed by death.

Cardiac diseases, e. g., arterio-sclerosis.

A case has been reported of albuminuric tonsillitis, in which spontaneous hemorrhage occurred from an ulcer in the upper part of the left tonsil, in a patient suffering from grave kidney disease, with death nine days later after various remedies failed to arrest it. A similar case has been reported in which the hemorrhage was attributed to chronic nephritis and the onset of menstruation.

The operation should not be performed during the menstrual period or within a week of its onset, for many cases of serious hemorrhage have occurred at this time. One case in Moore's experience especially exemplifies this point:

A young girl, aged 16, had been operated upon by a colleague, and her tonsils enucleated. Very little bleeding occurred at the operation, but four hours later profuse and persistent oozing of bright arterial blood began from both tonsillar fossae and continued for five hours, accompanied by recurring vomiting of large quantities of blood from the stomach. No spurting vessels could be seen. A hemostat, placed in position on one side, only made the hemorrhage more profuse from the other. Since continuous sponge compression failed to stop the bleeding, and the patient was becoming exsanguinated and exhausted, Moore advised that the faucial pillars should be sutured on both sides. He accomplished this without any difficulty under a general anesthetic and the hemorrhage immediately ceased. The ligatures were removed in 15 hours, and there was no recurrence of the bleeding. It was later discovered that the patient had begun to menstruate a few days before her time.

The operation is contra-indicated in those cases in which there is special reason to expect hemorrhage *e. g., in* hemophilia, purpuric diseases etc. If there is any doubt as to the coagulability of the blood, its index should be ascertained before operation.

Since there is a tendency to attribute all types of slow and persistent bleeding to the condition of hemophilia, it should not be forgotten that hemophilia is very rare, and is confined to the male sex. Osler says, "in the diagnosis of this condition the family tendency is important. A single uncontrollable hemorrhage in a child or adult is not to be ranked as hemophilic, but it is only when a person shows a marked tendency to multiple hemorrhage, spontaneous or traumatic, which tendency is not transitory but persists, and particularly if there have been joint affections, that we may consider the condition hemophilia." In a later edition, he says, "it is essential for the diagnosis that the individual should have been more or less subject to bleeding from various parts throughout life," and he quotes the opinion of Bullock and Fildes that "no solitary hemorrhage however inexplicable should be regarded as hemophilia, it is necessary to show that the individual has been repeatedly attacked, if not from birth, from infancy."

Any pulsations in the neighborhood due to abnormal distribution or enlargement of blood vessels, *e. g.*, the ascending pharyngeal, should be carefully noted by a thorough examination of the throat before operation.

Every operated case should be within easy reach of the operator, for serious bleeding may take place at various stages, *e. g.*, hemorrhage may be primary, *i. e.*, occurring at the time of operation; reactionary, occurring shortly after operation (in many cases being a continuation of the primary, or secondary, occurring some time afterwards). William Hill has suggested that these stages should be defined in more detail.

1. Primary hemorrhage, the most frequent form, occurring during operation and continuing after excision is effected.

2. Early secondary, reactionary or delayed hemorrhage, as it is unhappily called by some, occurring within a few hours of the cessation of the non-serious primary operative bleeding.

3. Recurrent secondary hemorrhage.—Several attacks occurring with the first few days (uncommon).

4. Late, or true secondary hemorrhage, coming on about fifth to seventh day with separation of sloughs (very rare).

Preparation of patient for operation.—The operation of tonsillectomy is still looked upon by many practitioners in too light a manner, consequently small consideration in some cases is paid to ordinary surgical procedures. In all cases there should be a period of preparation, and this is equally as important as for a more serious operation. We should not forget that the general health of these patients is indifferent or bad, and that many are suffering from septic tonsils with toxic absorption and have low resisting power.

The administration of a purgative two days prior to the operation is better than the night before, since it avoids disturbing the patient on the morning of the operation. Rest for 12 hours before operation conduces to a placid nervous system, and consequent better vaso-motor control. It is advisable that smoking and alcohol should be prohibited for at least three or four days, and that only plain and light food should be taken for 24 hours, and nothing for four hours before the operation.

The amount of bleeding which may occur appears to depend to a considerable extent on the technique of the operation and the skill of the operator. In no operation are the services of an expert anesthetist of greater value, and the success of the operation may in no small way depend on his skill. Whatever anesthetic is chosen, a clear despiratory should be assured, and an adequate intake of air maintained throughout the anesthesia so as to avoid unnecessary congestion and increased blood pressure. In this connection, it is important that the tongue should not be allowed to fall backwards and obstruct the air passage. The passage of blood into the larynx, or stomach, during the operation, interfering with normal despiration and causing coughing, retching, or vomiting, should be prevented. The deep and dangerous chloroform anesthesia considered necessary by some operators for the dissection method of enucleation, in order to reduce the hemorrhage during operation so as to obtain a bloodless field, increases the risk of reactionary or secondary hemorrhage.

In those cases in which even moderate loss of blood is very undesirable, or when it is likely to be excessive, it may be advisable to administer calcium lactate for three days before operation in doses of from 10 to 30 grains twice a day. Almroth Wright has shown that "the greatest acceleration of coagulation is obtained with one or two 15 grain doses; the effect may appear in three hours, reach its height in 24 hours, and last until the third day."

Adrenalin predisposes to secondary hemorrhage. Yankauer maintains that "the use of adrenalin increases the liability to post-operative reactionary or delayed hemorrhage, such hemorrhages occurring about six hours after the operation." He says "adrenalin produces its characteristic ischemia, not, as is erronously supposed by some, by contracting the capillaries but by contracting the unstriped muscle fibres in the muscular coats of the small arteries. Such vessels are considerably larger than capillaries, and, when the effect of the adrenalin has passed away, the vessel wall is temporarily paralyzed, and dilatation ensues. Unless a strong clot has formed in the terminal capillaries, hemorrhage difficult to control is likely to occur."

Citelli has reported on the advantages of pituitary extract given subcutaneously in controlling hemorrhage following turbinectomy, sinus operations, and tonsillectomy.

Kahn and Gordon have made further investigations, and summarized their results in 50 cases of removal of tonsils and adenoids as follows:

1. The blood loss was greatly reduced.
2. The coagulation-time of the blood was reduced from one-third to one-half or more after a hypodermic administration of pituitrin in doses of 12 minims to children and 15 minims to adults.
3. The coagulation-time was decreased within 15 minutes, and it remained so for over 24 hours.
4. Pituitrin increases the strength of the heart-beat, and decreases its frequency. It undoubtedly has a vaso-motor constricting effect as well as a coagulating effect.

Gordon refers to one hemophilic case in which the coagulation time was 15 minutes, and this was brought down to three minutes.

In these respects it has great advantages over calcium lactate, and can, therefore, be recommended as a prophylactic given 15 to 30 minutes before removal of the tonsils.—(*Practitioner*, No. 4, 1918.)

Obstetrics and Gynecology

The Influence of Menstruation on Acidosis in Diabetes Mellitus.

George A. Harrop, Jr., and Herman O. Mosenthal of Johns Hopkins report a case. Menstruation has not been regarded as a factor which influences the course of diabetes mellitus appreciably. The history and the physical examination of this patient were as follows:

H. L., colored; aged, 18; schoolgirl. Admitted September 21, 1917. Discharged November 11, 1917. Died November 27, 1917.

Past History.—Essentially negative. Menstruation began at 15. The periods were regular, but often lasted for a week. They were accompanied by a good deal of dysmenorrhea. Her best weight before onset of the diabetes was 101 pounds.

Present Illness.—The first definite symptom of diabetes was polyuria, which was noticed one year ago and has gradually become more marked, until now she voids every hour or two during the day and night. At about the same time she began to lose weight, and to feel drowsy and listless. She grew irritable and complained of pains in the legs, and later in the back. Her appetite has become enormous and she has had excessive thirst. Duding the past few months her menses have become more irregular. The last period occurred about two weeks prior to her admission and lasted a week. During the last three or four days of menstruation, the mother states, the girl was very drowsy, she had no desire for food, she complained of abdominal pain, her breathing was deep, and the amount of urine voided during this time was much less than usual.

72½ pounds. A thin, undernourished colored girl. The pupils

Physical Examination.—Height, 5 feet 1½ inches. Weight, are equal and react to light. Marked pyorrhea alveolaris. Heart and lungs clear. Abdomen negative; liver and spleen not enlarged. Thyroid isthmus palpable, and contains a pea-sized nodule. Knee-jerks absent. There are no motor or sensory disturbances.

Blood Examination.—W. B. C., 7,900. R. B. C., 5,200,000. Hemoglobin (Sahli), 78 per cent. Wassermann reaction negative. Blood sugar on admission, 0.148 per cent.

Throughout these studies the nitrogen was determined by the Kjeldahl method, the urinary ammonia by Steel's modification of Folin's method, the urinary glucose of Benedict's modification of Fehling's solution, the acetone substance in the urine by Shaffer's procedure, the blood sugar by the method of Lewis and Benedict, the tension of carbon dioxide in the alveolar air according to Marriott, and the food values were calculated from the tables of Atwater and Bryant.

It is readily appreciated that this girl entered the hospital suffering from a very severe type of diabetes mellitus, accompanied by a marked degree of acidosis. The urine could be rendered sugar-free only temporarily by means of starvation; the acid substances in the urine were fairly high, the percentage of ammonia nitrogen of the total urinary nitrogen was well above the normal, and the carbon dioxide tension of the alveolar air was low, in spite of the large amounts of bicarbonate of soda administered. The patient was thin and weak, but exhibited none of the distressing subjective symptoms that are often associated with marked acidosis and impending diabetic coma. The gravity of the situation was realized, and every effort was made to improve the girl's condition. At the end of one month the acidosis had somewhat diminished, but the tolerance for carbohydrates had not increased at all. She was evidently one of the rare but unfortunate cases of diabetes mellitus which are not relieved by the starvation treatment.

On the 28th of October, with the onset of the menstrual period, the picture changed completely. On that day she complained of abdominal pain and refused food. At 7 p. m. a change in the character of the breathing, with increasing drowsiness, was noticed, and at 10 p. m. there was well-marked hypernea; she could scarcely be aroused; there was marked involuntary twitching of the facial muscles, and the carbon dioxide tension of the alveolar air was 20 mm.

The next day the symptoms remained unchanged. On the third day the conditions improved somewhat and by November 1 all the symptoms which had manifested themselves at the time of menstruation began had disappeared. The patient was treated with large doses of bicarbonate of soda by mouth, rectum, and intravenously, and by starvation. The effects of this therapy were satisfactory.

The tests during this period, which may be regarded as one of diabetic coma, show no appreciable increase in the severity of the acidosis over that of one month previously when there were no subjective symptoms of acidosis. There is perhaps a slight tendency toward a rise in the amount of acid substances and ammonia, but no significant change occurred.

The alveolar air showed a lower tension of carbon dioxide on the first day of menstruation than had previously been recorded, but here again the difference was only slight. It may, therefore, be concluded that the process of menstruation in some manner affected the body so that it was less resistant to the influences of the acid bodies and that diabetic coma resulted.

There are several other facts that point to the profound effects which were produced by the menstrual process. During the period the glycosuria and the quantity of nitrogen in the urine were both much increased. These phenomena have often been noted in so-called cases of acute diabetes. When menstruation had ceased, it was apparent that some permanent damage to the carbohydrate metabolism had occurred. The amounts of glucose excreted were somewhat higher than before, and the acidosis, as indicated by the acetonuria and the quantity of ammonia in the urine, was distinctly more pronounced.

Letters received from the patient's mother and her physician would seem to show that during the two weeks after she left the hospital (November 11) her condition was thought to be unchanged. She was permitted to be up and about and there was presumably very little restriction imposed upon her diet. On November 25 menstruation began. She was very drowsy and nauseated. Deep coma came on during the course of the day, and on the following day several general convulsions occurred. There was evidently typical air hunger. Death came about 36 hours after the onset of the diabetic coma, and on the third day following the beginning of the menstrual period.

In this case of diabetes mellitus it seems justified to conclude that the menstruation was accompanied by an increase in the acidosis. The symptoms became more marked with each successive period until fatal coma occurred. This is not a common sequence of events, but may possibly be regarded as an indication that diabetic patients should be closely observed during the menstrual period.—(*Johns Hopkins Hosp. Bull.*, July, 1918.)

Cesarean Section Under Local Anesthesia.

Hugh H. Trout of Roanoke, Va., remarks that since Einhorn gave to the surgical world novocain, most of the major operations of surgery have been performed with its use. In one series he has had 18 cesarean sections done with local anesthetic, and a considerable number of others with general.

It is necessary for any surgeon attempting this work to be accustomed to the employment of local anesthetics, and any operator expecting to gain entrance painlessly into the abdominal cavity should certainly be familiar with the great work of Lennander on the sensibility of the various viscera and parietal peritoneum. Curious to note, Lennander does not mention the sensibility of the uterus, either in the pregnant or the non-pregnant condition, further than to state: "All organs receiving their nerve supply only from the sympathetic nerve and from the vagus, below the branching off of the recurrent nerve have no sensation. According to my observations, therefore, the abdominal and pelvic viscera are devoid of nerves, to convey the sense of pain, pressure, heat or cold."

The author observed that the patients have no pain when the uterus is being incised, but do complain of nausea and pain when there is too much traction. The point is demonstrated in the fact that in all 18 cases, the most painful part of the operation was the lifting of the uterus out of the abdominal cavity.

The technique of the operation follows. Operation preceded by morphia, ⅙, novocain, ½ of 1 per cent; with three drops

of adrenalin to the ounce is the solution employed, and of this, he has used as high as 250 cubic centimeters. In the last 11 cases he omitted the adrenalin, and could see no difference in the duration of the effect of the anesthetic or the amount of bleeding.

The skin is infiltrated in the usual manner by forming one wheel after another. In the first five cases he made the incision from the pubes upward until he could have room to deliver the uterus, but during the last thirteen, he made the middle of the incision about the level of the umbilicus, and the upper end about on a level with the fundus of the pregnant uterus. The fascia is infiltrated exactly in the same manner as the skin, and muscles are usually so thin the fibers separate without trouble. A small opening is then made in the peritoneum, and index finger of left hand inserted and peritoneum infiltrated, keeping this finger on the inside as a guide for the needle, while injecting this very thin membrane. This part of the operation is far easier than is commonly supposed. The uterus is lifted out of the abdominal cavity, and moist sodium citrate and sodium chloride pads or towels placed between it and the intestines.

It is important to have the upper portion of the abdominal incision so placed as to be slightly higher than the fundus of the pregnant uterus, and in this manner the uterus can be allowed to "ride out" of the peritoneal cavity; thus removing what is sometimes the only painful part of the operation. If the incision is not too long, the abdominal wall will "hug" the uterus and serve to retain the intestines without the use of pads, etc.

As a matter of precaution, and to save time after incision of the uterus, place a line of interlocking sutures of chromic catgut on each side of the fundus of the uterus. These lines are about one inch apart. The sutures are placed as follows: The points of entrance and exit are about 1½ inches apart. The next suture has its point of entrance half way between the two above points, and this manner of inserting sutures is continued until about eight to ten sutures are placed in each side of the future line of incision. As these sutures are placed in the direction of the long axis of the uterus, it is easily seen a line of sutures so placed will interlock one another, and control all bleeding. These sutures go through the whole muscular wall, and an assistant on each side makes traction on the entire line, thus lifting the uterus up, steadying the same, and controlling the hemorrhage. After delivery of the child and membranes, these sutures are tied across the line of incision, and in this manner we have at least eight double mattress sutures which not only control the hemorrhage but give fairly accurate approximation. This whole suture line is covered over by means of a continuous suture of plain catgut, approximating the peritoneal surfaces, leaving no raw surfaces for future adhesions. The abdominal incision is closed in the usual manner.

The following is a very brief synopsis of the eighteen cases:

ECLAMPSIA—9 CASES.

Three mothers died, all having had convulsions before operation; six children were born dead, three living. There was very little dilatation of cervix in any of these cases. Forceps delivery was attempted previous to operation in all three cases that died, no forceps in the remainder of the series. All cases having had convulsions presented an aura of radiating epigastric pain. There were six primiparae and three multiparae.

CONTRACTED PELVIS—5 CASES.

All mothers living, three children living, and two born dead.

PLACENTA PREVIA—2 CASES.

Both mothers living.

PYELONEPHRITIS.

One case of pyelonephritis was not relieved by urethral catheterization, etc., and the patient was very toxic.

The mother is living, the child was born dead.

UTERINE INTERIA IN PRIMAPARAE—ONE CASE.

There was one case of uterine inertia in a primiparae. The patient was in labor over 48 hours, without any dilatation, and collapse of mother.

The mother and baby are living.

From Trout's experience with those cases he is convinced where the condition of the mother makes the giving of a general anesthetic, unsafe, the employment of novocain is indicated, and its use does not present the difficulties one would naturally expect.—(*S. G. & O.*, July, 1918.)

A Combined Bacteriological and Histological Study of the Endometrium in Health and in Disease.

A. H. Curtis considers four classes of cases: (1) nulliparæ without history or gross evidence of infection; (2) nulliparæ with history or gross evidence of infection; (3) parous women without history or gross evidence of infection; (4) parous women with history or gross evidence of infection. Of the 118 uteri studied there were 101 endometria that showed no growth of bacteria, while there was a growth, either in pure or in mixed culture, in the remaining 17. These conclusions are reached:

1. The endometrium of nulliparæ without history or gross evidence of pelvic infection is almost invariably free from bacteria and is also microscopically normal.
2. Almost all women who have undergone normal pregnancy with pelvic history otherwise negative, likewise possess bacteria-free endometria.
3. Patients with a history of chronic infection, from whose endometrium bacteria are obtainable, almost all have salpingitis with equally good growth. Chronic endometritis, *per se*, with bacteria present in smears or cultures, is practically to be ruled out as a clinical entity.
4. The gonococcus is the organism most commonly found in the uterus. Streptococci and diplococci are less common. The latter appear to live longer in the tissues than the gonococci and can apparently be isolated long after all infection seems to have disappeared.
5. Bacteria have seldom been found unless there is infiltration with polynuclear leucocytes in addition to plasma and round cells.
6. It is a wise precaution to sterilize the cervical canal by iodine, as far as it is patulous, before any attempt is made to pass instruments into the uterine cavity. Bacteria are often present in the endometrium following curettage by the technique commonly employed.
7. It would seem desirable, other conditions being equal, to operate immediately at the close of menstruation, for at this time there exists a polynuclear leucocytosis, which, to some extent, at least, aids the convalescence.
8. At the time of hysterectomy or of subtotal hysterectomy, if the tubes and other pelvic viscera are healthy, spread of infection from the endometrium need not be feared, the only exceptions being the presence of pyometra or recent exploration of the uterus.
9. Intra-uterine therapy is of little avail, for the most important focus of infection is well beyond its reach. In the cervix there are many glands that harbor infection, and it is against discharges from the cervix that treatment can be efficiently directed.—(*S. G. & O.*, xxvi, 1918.)

A Venereal Maternity Center.

The experiment of grouping together as in-patients parturient women suffering from venereal disease was begun in September last under the auspices of the Local Government Board and the Metropolitan Asylums Board. The premises at Thavies Inn were built for the purpose of an infirmary, and were adapted without difficulty to the special requirements of a small lying-in hospital. Every case is investigated and reported on very fully. It was contemplated at first that the work would be mainly connected with the mothers, but as time went on it has been extended to the treatment of the newborn babies with antisyphilitic remedies. A large room on the ground floor has been converted by means of partitions into a labor ward and treatment room. The routine treatment for syphilitic mothers is by intravenous injections of galyl or novarsenobillon, before and after labor. The infants receive intramuscular injections of galyl in glucose; the first injection is given between the seventh and tenth day, sometimes earlier, and the dose is repeated weekly or fortnightly. Both mother and infant also receive intramuscular injections with mercurial cream, the B.P.C. 40 per cent. preparation being used.

Up to the present nineteen children of syphilitic mothers have received anti-syphilitic treatment, and there has been one death only, that of an eight months baby. With few exceptions the infants gave strong positive Wassermann reactions when born. The weights are taken weekly and recorded on the case-sheets. The treatment has produced no apparent ill effects, and all the infants (except one whose mother's milk was poor) have gained steadily in weight, whilst the tendency has been for the Wassermann reaction to become less strongly positive, and in several instances a negative result has already been obtained. Thirteen infants have left the center, but seven or eight of these still come up for fortnightly inspections and treatment. The results so far are encouraging, and although it is still quite in the experimental stage, the work of the Thavies Inn center would appear to open out a fruitful field for research.—(*Brit. Med. Jour.*)

The roentgenogram presents certain distinctive characteristics of an early tuberculous lesion.—Hubeny.